CAN MINDFULNESS-BASED INTERVENTIONS DELIVERED BY PRIMARY CARE PROVIDERS IN THE OFFICE SETTING IMPROVE NEGATIVE SYMPTOMS IN ADOLESCENTS WITH ANXIETY?

by

Kayla T. Switlishoff

Bachelor of Nursing, Mount Royal University, 2013

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Abstract

Anxiety is a mental health condition affecting adolescents with negative side effects and consequences. Primary care providers are faced with a growing number of visits related to adolescent mental health and must be comfortable in assessing and treating the negative symptoms associated with anxiety. With the potential for anxiety to begin in adolescence and worsen in adulthood, a thorough search of the literature was completed to determine ways to help adolescents manage negative symptoms associated with anxiety and improve their coping skills. Mindfulness has been gaining popularity within the mental health community and therefore was chosen as the area of focus to determine how the implementation of mindfulness-based interventions in primary care could alleviate negative symptoms associated with adolescent anxiety.

Upon completing the literature review, eight studies were chosen that highlighted how various care providers effectively delivered mindfulness interventions for adolescents experiencing anxiety, primarily within school and outpatient mental health settings. These studies showed trends related to positive effects including improving adolescent anxiety and improvements in other areas of the adolescents' lives. Additionally, it was found that it was important for primary care providers to reinforce the importance of using a supportive approach including parents or caretakers as this was shown as a protective factor. Although there were no specific studies introducing mindfulness within adolescent primary care, a list of recommendations was developed to provide evidence-based rationale towards integrating mindfulness-based interventions within primary care. By doing so, this provides a foundation for mindfulness-based interventions that primary care providers can utilize to support adolescents in managing their negative symptoms associated with anxiety.

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Chapter 1

Introduction

Anxiety is a mental health condition that can affect any individual at any given point within their lifetime. Many individuals carry anxiety with them in their day to day lives, however, knowing how to effectively manage and cope with these internal feelings is the difference between a manageable level of anxiety versus a medical diagnosis. For many adults, the development of certain mental health disorders first starts appearing in the early years of their life, most often within adolescence (Physical and Health Education Canada [PHEC], 2014). The Government of Canada (2019) has responded to the increasing need for mental health services within the country after recent polls from young Canadians suggested that increased mental health services were their major need and priority for budget allocation. A study conducted by Statistics Canada (2018) found that youth ages 12 to 17 demonstrated the most significant increase of perceived fair-to-poor mental health in comparison to other age groups.

Becoming aware of these statistics allowed me to reflect on my time spent working within the mental health system alongside patients who experienced anxiety. Throughout my years as a registered nurse, I was fortunate to work within inpatient psychiatry and meet individuals who have been struggling in managing anxiety since childhood. Within the current health care system, there is an evident lack of resources and mental health education available for youth at this vulnerable stage in their lives which is crucial for the development of healthy coping strategies (Malla et al., 2018). One intervention that has been gaining prevalence amongst health care clinicians in the treatment of anxiety is mindfulness. Mindfulness is best described as paying specific attention to thoughts and feelings occurring in the present moment without judgment and accepting the thoughts for what they are (Perry-Parish et al., 2016).

By using the person, intervention and outcome (PIO) framework (University of Northern British Columbia, 2018) of question development along with the knowledge of a need for improved mental health services directed towards youth in Canada, a search was conducted using a mindfulness-based approach in targeting the early development of anxiety. The goal of this paper is to determine if mindfulness-based interventions delivered by primary care providers in the office setting can improve negative symptoms in adolescents with anxiety. Although much of the literature surrounding mindfulness interventions towards youth has been implemented through school systems or mental health clinics, the purpose of this paper is to provide direction to clinicians in determining how to best integrate brief mindfulness interventions within their day-to-day practice during appointments with adolescents, while still allowing for further mental health services when appropriate. When clinicians consider the financial and social burdens associated with the presence of adolescent mental health conditions, it provides a strong incentive for care providers to instead focus on addressing effective coping strategies and education towards mental wellness that can improve the management of negative symptoms for the future (Vohra et al., 2019). This paper will review the current standing of mental wellbeing for adolescents at current time in addition to determining risk factors in the development of anxiety. After this, search strategies will be presented to determine what has been done in the past in presenting mindfulness within mental healthcare settings. Finally, a discussion and subsequent recommendations will be provided for practitioners who hope to gain a better understanding on how mindfulness can be effectively integrated within primary-care practices when working alongside adolescents experiencing negative symptoms of anxiety.

Chapter 2

Background and Context

When looking at introducing progressive ideas at improving negative psychiatric symptoms amongst adolescents with anxiety, it is important to take a step back and look at current trends and spending within the Canadian health care system. As mindfulness may be seen as a progressive and holistic approach to health care, it is important to understand the foundation of its origins and why this may be feasible option in the treatment of anxiety. This chapter will include sections related to the current state of mental wellness in Canada in addition to providing definitions of concepts important to this integrative review including adolescence, mindfulness and mindfulness interventions, anxiety and its risk factors in adolescents, primary care and primary care providers.

The Current State of Mental Wellness in Canada

In both rural and urban centers across Canada, a lack of mental health services and lengthy wait times for same end up costing the Canadian economy approximately $51 billion dollars when considering the impact of poor mental health outcomes of Canadians (Vohra et al., 2019). During their initial reporting in 2013, the Mental Health Commission of Canada found that approximately 7.5 million Canadians across the lifespan were living with mental illness and 1.6 million Canadians indicated their mental health care needs were not being met (Mental Health Commission of Canada, 2017). Additionally, between 2013 to 2014, approximately 5% of visits to the emergency department and 18% of hospitalizations for youth between the ages of 5 to 24 were due to a mental health condition (Canadian Institute for Health Information [CIHI], 2015). With staggering statistics such as these, it would be beneficial for primary care providers (PCPs) to consider practice approaches that might improve adolescent anxiety and prevent the

development of mental illnesses in adulthood as childhood anxiety increases the likelihood of developing anxiety as an adult (Kingston et al., 2015). Mental health awareness and prevention has become increasingly prevalent over recent years through various public and corporate campaigns such as Bell Let's Talk, which aims to reduce the stigma associated with mental illness. Many of these initiatives have gained momentum and demonstrated the importance of early awareness since research has demonstrated that half of adulthood mental illnesses begin in childhood (PHEC, 2014). With this knowledge, adolescence is an opportune time for PCPs to begin discussing and teaching wellness interventions that have the potential to improve the transition towards adulthood. Therefore, the following research question "can mindfulness-based interventions delivered by primary care providers in the office setting improve negative symptoms in adolescents with anxiety" was chosen for the topic of this paper to better understand how holistic methods of mental health promotion work at impacting the emotional outcomes amongst Canadian adolescents today.

Defining Adolescence

Adolescence as defined by the World Health Organization is the age range from 10 to 19 years old (WHO, n.d.). For this area of research, the age range of 10 to 19 will be focused on within the paper. Adolescence is a period that is characterized by a constant cycle of change related to identity, responsibilities, and growth (Johnstone et al., 2016). Furthermore, adolescence is a developmental period that impacts not only the physical and cognitive domains of their lives but also provides guidance towards economic and financial decisions that shape their future in adulthood (Patton et al., 2016). During adolescence, there is a large transitional period of both educational systems and social circles when moving quickly from elementary to middle then high school (Duchesne & Ratelle, 2016). This leads to many feelings of uncertainty,

stress and confusion (Duchesne & Ratelle, 2016). When facing these challenges with poor coping strategies, some adolescents may face setbacks in both their physical and mental health such as the development of anxiety disorders, depression or increased rates of risk-taking behaviours such as substance abuse, self-harm or suicide attempts (Johnstone et al., 2016). The challenge that this paper aims to address is the experience of adolescents who suffer from anxiety.

Defining Anxiety

The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) is utilized by health care professionals as guidance in the diagnosis of various mental health disorders (American Psychiatric Association, 2020). The DSM-V criteria for anxiety disorders include: experiences of excessive worry, fear or apprehension that occur for longer than six months that "occur out of proportion to the actual threat or danger" which therefore causes an individual to avoid certain situations and interferes with normal daily functioning (American Psychiatric Association, 2017; Public Health Agency of Canada, 2016, p. 4). The following diagnoses encompassed within the anxiety disorder category include: Generalized Anxiety Disorder, Agoraphobia, Social Anxiety Disorder (Social Phobia), Specific Phobia, Selective Mutism, Separation Anxiety Disorder, Panic Attack (Specifier), Panic Disorder along with substance-induced anxiety disorders, anxiety disorders due to another medical condition or other specified/unspecified anxiety disorders (Eapen & Črnčec, 2014). Although adolescents can develop any of the anxiety disorders as per the DSM-V diagnostic criteria, the most commonly occurring anxiety diagnoses for adolescents are generalized anxiety disorder, separation anxiety disorder and social anxiety disorder – otherwise known as the "pediatric anxiety disorder triad" (Wehry et al., 2015, p. 2). Although the pediatric anxiety disorder triad is not a diagnosis within the DSM-V, these are the most

frequently diagnosed adolescent anxiety disorders and the proper steps must be taken to ensure the correct source of anxiety (Wehry et al., 2015). Although anxiety presents with many visible mental health concerns and symptoms, there are also underlying physiological changes that coincide with its diagnosis that can lead to detrimental developmental concerns for adolescents.

Physiologic effects of anxiety in adolescents

Despite being one of the most prevalent mental health disorders within Canada, anxiety is by no means a benign disease, and with its diagnosis brings detrimental effects within the human body. Common symptoms of anxiety-related disorders include autonomic responses such as increased heart rate, blood pressure and respirations along with a general feeling of tenseness or the inability to sit still (McCance & Huether, 2019). Specifically in adolescents, anxiety can present differently than in adults and can include: a) being hyper vigilant (staying tense or on-guard), b) avoiding fears or triggers by engaging in tactics such as negotiating or whining, c) somatic complaints such as an upset stomach or headache to mask anxious symptoms, d) catastrophic reactions that are disproportionate to the situation and e) diminished relationships amongst family members once they begin to address anxious adolescents into facing their fears (Chiu et al., 2015). It is important to note that diagnosing anxiety amongst adolescents within a primary care setting presents with challenges for the practitioner as many adolescents develop fears and anxieties as part of the growth and development process (Beesdo et al., 2009). Therefore, a thorough history and professional relationship development is crucial in determining what are normal expected adolescent anxieties versus a true anxiety diagnosis with future negative implications (Wehry et al., 2015).

Anxiety disorders are also associated with increased risks of morbidity and concurrent diagnoses of depression that can lead to suicide (Strawn et al., 2013). In a normally developed

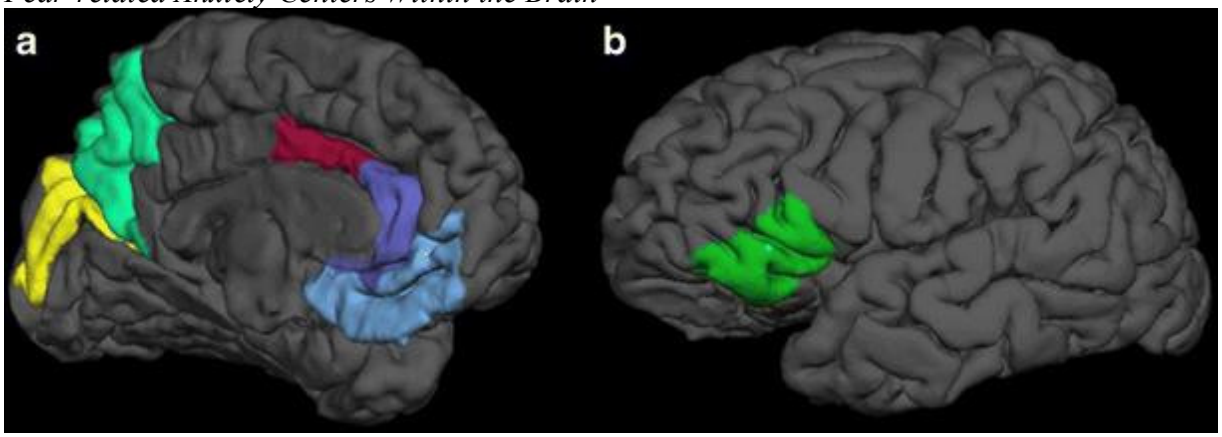
adolescent brain, significant changes occur that are thought to be only secondary in importance compared to infancy (Arain et al., 2013). Neurocircuitry channels in adolescence appear to be increasingly impacted by sex hormones (estrogen, testosterone, progesterone) and by environmental factors, demonstrating significant changes in behaviours related to sexual identity, sleeping or eating habits (Arain et al., 2013). Additionally, myelin synthesis and development within the frontal lobe of the brain increases adolescent's abilities to understand and process information and language while maturation in the limbic system (emotional center) of the brain impact adolescents in their decision-making and emotional regulation abilities (Arain et al., 2013; Whitford et al., 2007).

From a neuroanatomical standpoint, adolescents with anxiety have been shown to have increased activity within the amygdala and cingulate cortex activity, two centers of the brain which heightens the fear response (Strawn et al., 2013). Furthermore, there appears to be increased sensitivities to dopamine and serotonin, two neurotransmitters that are key in the development and maintenance of happiness (Arain et al., 2013; Farhud et al., 2014). Sensitivities and potential decreases with these neurotransmitters are displayed as mood alterations, difficulties in managing emotions or impacted impulse control which in turn have a direct implication in the developmental trajectory of adolescent anxiety disorders (Arain et al., 2013; Strawn et al., 2013). Additionally, the ventrolateral prefrontal cortex which regulates amygdala (fear response) activity, along with working towards extinction processes within fear conditioning, is found to be hyper-activated in adolescents experiencing anxiety and the degree to which it is activated is disproportionate to the actual anxiety levels that adolescents are faced with – thereby deconditioning the fear response and creating a negative cycle (Wehry et al., 2015). Finally, anxiety has been shown to increase gray matter volume in the right precuneus and

decreased white and gray matter in the posterior cingulate (an area of the brain responsible for emotional processing deficits within anxiety disorders), which has been found to correlate with anxious attachment styles and ruminative mentalization in adults who suffer from generalized anxiety disorder (GAD) (Hilbert et al., 2015; McCance & Huether, 2019; Strawn et al., 2013). Gray matter is responsible for many signalling functions of the brains such as memory and emotions, where white matter is responsible for transmitting these signals (Mercandante & Tadi, 2020). In Figure 1 below, the areas of the brain that are impacted by anxiety are highlighted in corresponding colours:

Figure 1

Fear-related Anxiety Centers Within the Brain



Note. Structures and regions implicated in pediatric patients with fear-based anxiety disorders. The cuneus (*yellow*), precuneus (*light green*), dorsal anterior cingulate (*red*), pre/subgenual anterior cingulate (*purple*), and ventromedial prefrontal cortex (*light blue*) are shown medially in **a**, while the ventrolateral prefrontal cortex (VLPFC, *lime green*) is shown in the left lateral view in **b**. *Permission for image received and retrieved from Wehry et al., 2015, p. 3*.

Anxiety Disorders Amongst Adolescents in Canada

Anxiety disorders are amongst one of the most diagnosed mental health concerns in adolescents and are often seen as a comorbid condition (Duchesne & Ratelle, 2017; Watterson et al., 2017). Although suffering from anxiety alone can disabling for many adolescents, it is often seen correlated with a diagnosis of depression, attention hyperactivity disorder or substance use

disorder which can lead to further negative effects if not treated appropriately (Watterson et al., 2017; Public Health Agency of Canada, 2016).

When looking at treatments of adolescent anxiety, it is important to note that the Canadian Network for Mood and Anxiety indicated that Health Canada has not approved any antidepressant use for individuals under the age of 18, although some are approved by FDA - the main antidepressant being fluoxetine followed by secondary choices of escitalopram, sertraline and citalopram (MacQueen et al., 2016). Most recently, a study conducted by Statistics Canada (2018) found that adolescents ages 12 to 17 demonstrated the most significant increase of perceived fair-to-poor mental health by 1.4% when compared to other age groups. Within the Canadian health care system today, many adolescents experience difficulties obtaining pediatric psychiatry services in rural or remote areas, and such, it is imperative that strategies be implemented early to strengthen coping skills prior to reaching adulthood (Butler & Pang, 2014; Stewart & Hamza, 2017).

Risk factors for developing anxiety in adolescence

Anxiety disorders amongst adolescents have been shown to present their symptoms earlier than other mental health disorders (Hudson et al., 2019). Of note, certain epidemiological studies have demonstrated that the average age for initial appearance of clinical anxiety symptoms is 11 years old (Duchesne & Ratelle, 2016). Thus, it is of utmost importance to be able to identify certain risk factors that may predispose adolescents to the development of anxiety.

Childhood behaviour and parenting styles. Hudson et al. (2019) found early childhood predictors of adolescent anxiety included children that were behaviourally inhibited as well as maternal overinvolvement in parenting styles. These risk factors could be attributed to a

phenomenon called anxiety sensitivity, a condition where the experiences of anxious symptoms cause beliefs of harmful physical, mental and social consequences (Allan et al., 2014). Thus, children are unable to develop healthy behavioural responses, maintain a low level of independence and become more avoidant and anxious of future instances, creating a negative feedback loop towards the development of anxiety disorders (Allan et al., 2014; Hudson et al., 2019). Additionally, being raised within an insecure attachment style has been shown to be a risk factor for anxiety development as parents who are inconsistently responsive or consistently unresponsive cause confusion and increase negative emotions for their children (Newman et al., 2016).

Female gender. Female adolescents have been shown to have significantly higher rates of anxiety disorders in comparison to their male counterparts (Voltas et al., 2017). This can be attributed to skewed gender conceptions that females are more emotionally sensitive and face higher rates of increased gender-based stressors such as body dissatisfaction, restricted gender roles and experiencing more family or sexual abuse (Van Droogenbroeck et al., 2018). It was also found that females tend to over analyze, ruminate and perceive themselves as having an "imaginary audience" (Bluth et al., 2017, p. 841) to their struggles while navigating adolescence. These tendencies can lead to increased feelings of perceived anxiety (Bluth et al., 2017). When compared to their male counterparts, adolescent females tend to place significant focus on their social standing in addition to developing and securing peer relationships, where males are far less likely to be focused on ideologies such as popularity or negative self-image (Ohannessian et al., 2017). Finally, anxiety is viewed as an internalizing problem – meaning that the experiences are felt internally by those suffering from it, whereas externalizing problems are seen as outward displays of emotion such as aggression or delinquency (Ara, 2016). As females are found to

demonstrate anxious-type thinking patterns such as rumination or co-rumination with friends and family members while adolescent males demonstrate increased risk-taking behaviours or aggressive outbursts, it shows the difference in coping styles and provides further detail as to why the female gender tends to suffer from adolescent anxiety as compared to males (Ara, 2016; Ohannessian et al., 2017).

Unstable home environments. When children are raised in environments that model uncertainty and instability, this can increase anxiety levels throughout adolescence (Henry et al., 2019). Parents who suffer from depression and/or anxiety (primarily mothers), low socioeconomic status and children living in single parent homes or recent divorce can attribute to the development of anxiety disorders primarily due to a constant influx of negative environments and emotions that adolescents are surrounded by in their day-to-day lives (de la Torre-Luque et al., 2019; Voltas et al., 2017). As adolescents seek to discover their own identity, many tend to disengage from parental support, which Patton et al. (2016) found to be an early predictor of higher risky health behaviours such as substance use, increasing negative peer influences and poorer wellbeing. Additionally, adolescents that are raised in homes where their parents are suffering from mental illness are often experiencing life stressors at higher frequencies and enduring stress for longer periods than those who do not have parents that have a mental illness (Henry et al., 2019). Therefore, the trajectory for the development of anxiety disorders happens at a faster rate in these types of home environments (Henry et al., 2019).

Primary Care Providers

A primary care provider (PCP) is a health professional located within a primary care setting such as a clinic who is responsible for screening, diagnosing, prescribing, and referring patients for various health concerns (Jones et al., 2015). In Canada, primary care providers

include nurse practitioners and physicians. Not only do PCPs manage acute illnesses, they also work with patients "to develop treatment plans, coordinates patients' preventive, acute, and chronic disease treatments, and refers patients to community and social support services when needed" (Jones et al., 2015, p. 1829), in addition to encompassing a model of health promotion and disease prevention. In many situations, PCPs are the first point of contact when patients begin to seek help to better understand and treat their mental health concerns. Although PCPs are well-educated in mental health, there is significant literature demonstrating that PCPs feel that they do not have adequate knowledge regarding complementary therapies and are unsure where to receive the educational materials needed for proper delivery (Fulweiler & John, 2018). When trying to determine appropriate treatment for adolescent patients, PCPs are faced with additional barriers such as lengthy wait times and scare services available to their patients for outpatient psychiatric services within rural and remote areas (Jones et al., 2015; PHEC, 2014). Furthermore, when focusing on adolescence, it has been found that of every one in five who are experiencing mental illness, only one in six will receive adequate treatment for their symptoms (PHEC, 2014). Many adolescents feel that they lack the necessary skills to address the root cause of their anxiety or are fearful of interactions with others, primarily sharing amongst peers or teachers who they see daily (PHEC, 2014; McRae et al., 2016). Therefore, creating trusting relationships with adolescent patients is one way that PCPs can begin to break the cycle of increasing anxiety amongst today's youth.

Visits with PCPs provide a supportive space to address mental health concerns and barriers to accessing care amongst adolescents (Radovic et al., 2015). When introducing stress-reduction techniques, the office of a PCP is a safe and optimal space to begin teaching adolescents these techniques because PCPs such as nurse practitioners (NPs) can follow

adolescents throughout the lifespan and provide multiple opportunities for holistic models of health care delivery (British Columbia College of Nurses and Midwives [BCCNM], 2020). Studies have shown that adolescents who spend time alone with a PCP within the clinical setting receive a critical opportunity to address sensitive topics (i.e., mental health) and that increased involvement promotes independent health care related decision making by the adolescent (Daley et al., 2017).

Assessing adolescent anxiety within primary care

During an initial visit for a worsening anxiety problem in an adolescent, some PCPs may be unaware of where to look to start the approach to managing these symptoms. Fortunately, for PCPs working in British Columbia, the government of British Columbia has created a guideline to assist with diagnosing and managing adolescent anxiety titled "Anxiety and Depression in Youth: Diagnosis and Treatment" (British Columbia Guidelines [BC Guidelines], 2010). Throughout the guideline, parental involvement and information is viewed as a valuable tool when assessing adolescent anxiety and is recommended whenever possible (BC Guidelines, 2010). When behavioural changes are seen by the parent, it is important for the PCP to first obtain consent from the adolescent prior to discussing any concerns with the parent while ensuring that the adolescent is aware that details related to suicidality or other immediate harms to themselves or others must be addressed with a parent and/or caregiver (Sisler et al., 2020). Once consent has been obtained for a joint visit, PCPs must take steps in raising awareness and providing information towards adolescent mental illnesses to the family member while fostering an environment of mutual understanding (Reardon et al., 2017). If joint visits are completed during the initial discussion of anxiety experienced by the adolescent, this provides an additional opportunity for the PCP to obtain information related to the family history of mental health

conditions if the adolescent is not aware of same (Wehry et al., 2015). Furthermore, this creates an open dialogue for the parent to be transparent with the PCP as one study within the United States found that over half of parents who have concerns related to their adolescent's mental health or behavioural concerns did not discuss same with their child's doctor (Wissow et al., 2016). When family-centered and inclusive PCP-lead interventions are introduced at the initial assessment of adolescent anxiety, this helps to improve trust and foster positive attitudes towards seeking out future treatment for both the parent and the adolescent (Reardon et al., 2017).

Unfortunately, in this provincial guideline, there is a lack of information detailing what specific assessments can be used to rate anxiety besides the use of a of a 10-point scale or asking "how much" or "how often" the precipitating factor causes anxiety (BC Guidelines, 2010). The guideline also suggests looking at available anxiety assessment tools online to gain a better understanding of the adolescent's anxiety symptoms however provides no guidance on where to seek these out (BC Guidelines, 2010). Therefore, it is imperative that PCPs research the anxiety assessment tools available to them to better understand the experience of the adolescent, while promoting involvement and support from the parent or caregiver. The importance of choosing these assessment tools will be discussed further on in this paper when developing treatment plans for adolescent anxiety. Additionally, since pharmacotherapy is not seen as a first line option for adolescents, different psychosocial interventions such as mindfulness must be trialled first (BC Guidelines, 2010; CIHI, 2015).

History of Mindfulness Teachings

The use of mindfulness within healthcare was initially introduced by Dr. John Kabat-Zinn in 1979, with the hopes of alleviating pain and unpleasant symptoms experienced by patients diagnosed with chronic disease or cancer (White, 2014). Mindfulness is a phenomenon

that can be classified as an abstract concept, meaning that it can contain varying descripting adjectives to individuals, dependant on how the practice has best served them in their own personal experiences. Dr. Kabat-Zinn (1994) provided a more specific definition of using mindfulness within medicine in his own teachings as the practice of paying specific attention to the thoughts and feelings of the present moment without casting judgment while simultaneously accepting and acknowledging these thoughts for what they are (as cited in Klainin-Yobas et al., 2012). Dr. Kabat-Zinn initially developed standardized MBIs within medicine in 1979 and was shown to help a variety of clinical populations (White, 2014). Since its initial introduction as a method to alleviate negative symptoms associated with chronic disease and cancer, mindfulness has been introduced in treatment programs associated with diet, exercise and substance use in addition to improving emotional connections and empathy amongst one another in the Western world (Raski, 2015; White, 2014). The basis of mindfulness has grown as a treatment for mental health conditions, as it allows participants to be aware of ruminative or negative thought patterns that are commonly seen within anxiety or other mental health conditions (Tan, 2015). Additionally, as MBIs were first introduced as a treatment for adults, more researchers are undertaking research to gain a better understanding of its usefulness within adolescent populations (Ali et al., 2017; Bluth et al., 2016; Borquist-Conlon et al., 2019; Díaz-González et al., 2018; Dunning et al., 2019; Tan & Martin, 2015). Since adolescents with anxiety disorders are shown to have impaired activation of the fear-response, mindfulness practice works at creating more functional neuroplastic changes that reduce thought patterns such as rumination or perseveration (Shonin et al, 2015; Strawn, 2013). Studies have also demonstrated that benefits of MBIs have been shown to improve mental wellness, attention and emotional regulation amongst adolescents (Tan, 2015; Zoogman et al., 2015). As many patients today look at researching and

discovering additional methods of self-care and mental wellness, mindfulness fits the category with its practice being universal and adaptable to most lifestyles (Rayan & Ahmad, 2016).

Methods of mindfulness practice within mental health care

There are four main mindfulness-based treatment approaches that are currently used within mental health care that has the potential to be integrated for future primary care practice: mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), mindful self-compassion (MSC), and acceptance and commitment theory (ACT) (Rudaz et al., 2017). All four treatment approaches were initially developed for distinct concerns but are centered around the basis of mindfulness (Rudaz et al., 2017).

Mindfulness-based stress reduction (MBSR) is an intervention that is typically delivered over an eight-week period that provides both formal and informal methods of practice as well as take-home homework in the form of mindfulness meditation guided from audio CDs (Gu et al., 2015). MBSR was the first standardized mindfulness intervention introduced by Dr. Kabat-Zinn in 1979 and was the basis for further applications of MBIs within clinical patient populations (White, 2014). Strategies included within MBSR teachings include sitting meditation, yoga (primarily Hatha yoga) along with performing a body scan which can be described as paying attention to different areas or aspects of the body with intention (Hofmann et al., 2010). Initially designed for pain management, MBSR has also demonstrated improvements in levels of anxiety, depressive symptoms, stress, and psychological symptoms related to cancer pain (Gu et al., 2015). Even amongst healthy individuals, MBSR has been shown to improve quality of life sentiments and reduce stress levels amongst health care professionals who participate in their own individual practices (Khoury et al., 2015).

Mindfulness-based cognitive therapy (MBCT) typically follows the same structure as MBSR utilizing an eight-week model of delivery and is based on the premise of MBSR with the addition of cognitive-behavioural therapy (CBT) approaches incorporated within the practice (Britton et al., 2017). CBT is one of the first-line treatment options for anxiety listed on BC Guidelines (2010) as it allows adolescents to avoid avoidance and provides adolescents the chance to face their fears but come with small group sizes lengthy wait times for official treatment groups (Villabo et al., 2018). MBCT was initially developed to prevent depressive relapses amongst patients but is now applied for anxiety or other mood disorders related to overeating, smoking and substance abuse in addition to treatment non-compliance (Britton et al., 2017). The CBT elements found amongst MBCT therapy include education surrounding the nature of one's thoughts as events rather than facts to prevent ruminative qualities that are often seen amongst individuals with depression and are delivered through practices such as group sessions, a silent retreat day in addition to take-home assignments (Britton et al., 2017). Evidence from several clinical trials with a focus on adults has shown that when MBCT is introduced into therapy, its efficacy is comparable to maintenance dosing of antidepressants and has been included amongst several clinical guidelines within the United Kingdom (Tickell et al., 2020).

Mindful self compassion (MSC) is an eight-week course that was initially developed by Christopher K. Germer and Kristin Neff that aimed to provide educational tools for adults that provides both formal and informal delivery methods such as guided mediation, discussion and experiential exercises to cultivate the trait of self-compassion (Bluth & Eisenlohr-Moul, 2017). The practices allow for participants to engage in practices such as self-compassion meditation and performing actions such as placing the hand over one's heart and repeating compassionate phrases during times of struggle (Rudaz et al., 2017). Importance is stressed in distinguishing

self-compassion from self-esteem as self-esteem is thought to reflect upon comparing one's abilities to others where self-compassion centers on the ideology that we are all connected through common humanity (Bluth & Blanton, 2014). MSC has been shown to provide improved emotional regulation in addition to improving feelings of calmness or relaxation in the lives of adolescents that have completed this program style (Galla, 2016).

Finally, the acceptance and commitment theory (ACT) differs from the previously mentioned mindfulness interventions as it is viewed as a variation of CBT but does not include any formal meditation exercises (Rudaz et al., 2017). ACT is based on the premise of functional contextualism which is defined as an approach which links predictions and influence of behaviours based on the "precision, scope, and depth of whole organisms interacting in and with a context considered historically and situationally" (Hayes et al., 2013, p. 3). ACT encourages participants to focus attention on "the context and the function of psychological events rather than the content, form, and frequency with which they occur (Bluett et al., 2014, p. 613). Psychological flexibility aims to be increased through the practice of ACT in a broader and more flexible method of delivery focusing on six core skills: 1) remaining flexible and within the present moment through mindfulness 2) maintaining a balanced perspective on thoughts and feelings so that negative memories do not automatically create avoidant behaviours 3) maintaining clear goals and hopes 4) remaining committed towards doing things that align with previously mentioned goals 5) accepting unwanted feelings by performing difficult actions that are consistent with hopes or goals and 6) developing the ability to step back from intrusive thoughts and view the situation for what it is actually is rather than what the mind believes it is (Dindo et al., 2017). Through these skills, participants learn to accept their thoughts through a mindfulness-based premise of staying aware of the present moment (Bluett et al., 2014; Dindo et

al., 2017). Although ACT has been studied in various mental health populations, the effects on adolescence is an ongoing study but has shown improvements in adolescent populations such as those with chronic pain, patients with eating disorders, depression, and high-risk sexual behaviours (Livheim et al., 2015). In one comparison study that sought to demonstrate the benefits of ACT versus CBT, the study found that ACT produced similar efficacy results as CBT in reducing anxious symptoms amongst adolescents and that ACT was suitable for this age group as adolescents think "less literally than adults" and are better able to "grasp abstract concepts through experience" (Hancock et al., 2018, p.296).

As PCPs may not have the ability to integrate the full mindfulness interventions within their practice, brief MBIs are an option to consider. Brief MBIs can be defined as time-sensitive interventions taken from the full mindfulness intervention programs previously listed, and can include condensed mindfulness meditation, mindful breathing, or body scans (Schumer et al., 2018). It is important to note that although mindfulness is an emerging topic amongst adolescence, it has been effectively integrated within various inpatient and outpatient clinical settings (Ruiz-Íñiguez et al., 2019). Practitioners have used data from mindfulness interventions and its efficacy in adults to create adaptations such as MBCT-C for children ages 10 to 14 and MBSR-T for adolescents ages 14 to 18 to better suit and adapt mindfulness interventions that reflect the differences in adolescents attention spans and ability to comprehend advanced concepts (Zoogman et al., 2015). Amongst adolescents, Burke outlined that "attitude, attention, and intention" are key concepts that guide their MBI practice (Burke, 2010, p.2). Burke (2010) identified that a non-judgmental attitude, acceptance of the emotional experiences and attention towards the adolescent's focus on oneself are important concepts to understand to optimize outcomes of MBIs amongst adolescents.

The Theory of Self-Efficacy

To effectively integrate the use of mindfulness within PCP practice, the theory of self-efficacy (TSE) created by Bandura (1977) provides a strong framework for PCPs to utilize when introducing new interventions into their practice to be delivered to adolescents. Bandura's (1977) theory explains that a patient's perception of their ability to reach a certain goal is gained through perseverance and overcoming obstacles, which can be a topic of focus for PCPs and their patients during in-office visits. Through this method of learning, there is an improvement in their ability to cope in the face of stressors and a positive impact towards maladaptive behavioural responses (Bandura, 1977). This theory coincides with the previously discussed neurobiological changes that occur within the adolescent period such as myelin synthesis within the frontal lobe which improves ability to comprehend and process complex information (Arain et al., 2013). Risjord (2010) encourages the borrowing of theories as it presents no threat to the medical disciplines when used appropriately as it helps to solve problems seen within practice. Some of these problems include a general lack of available child psychiatric services or reduced amounts of services available towards youth experiencing anxiety in rural or remote locations (Patton et al., 2016; PHEC, 2014). Having the ability to reduce the amount of fear or anxiety experienced by an adolescent within PCP practice allows for improvement towards the youth's discovery of their identity, thus instilling confidence during a vulnerable period. Furthermore, the act of introducing MBIs within primary care serves as a stepping-stone towards adolescent patients developing healthy coping skills and feeling better able to manage negative symptoms associated with anxiety, thus reinforcing the utilization of this framework by PCPs (Fulweiler & John, 2018).

Patients avoiding the feeling of reliving painful past experiences creates a large barrier associated with implementing effective coping strategies within PCP practice: the barrier of oneself. During the growth and development of the adolescence period, many adolescents feel as though they lack the necessary skills to address the root cause of their anxiety or are fearful of interactions with others (McRae et al., 2016). Therefore, Bandura (1977) provides guidance through the TSE by stating that self-directed mastery practices such as mindfulness help with: 1) creating additional exposure to former threats and by overcoming these negative experiences, patients can prove to themselves that they are no longer controlled by what they feared, 2) allowing the ability to practice coping skills within a safe space, which can lessen vulnerable feelings associated with stress, and 3) providing opportunities for independent performance leading to successful experiences, thus reinforcing an improved sense of self-efficacy and resilience. Self-directed mastery practices work at strengthening the brains innate responses to fearful internal or external stimuli, otherwise known as brain plasticity (Bandura, 1977; de la Torre-Luque et al., 2019). Knowledge surrounding these premises on the TSE are important for PCPs to be cognisant of when adolescents are presenting with maladaptive coping skills specifically related to their experiences with anxiety.

The previous chapters provided background information related to the introduction of mindfulness within modern medicine and its methods of utilization and efficacy amongst different patients across the lifespan. By gaining a better understanding of the premise and current statistics of anxiety amongst adolescents within Canada, PCPs can begin to understand the framework of integrating mindfulness within their practice to potentially lessen the negative effects that anxiety produces for their patients at a young age that can follow adolescents into adulthood.

Chapter 3

Integrative Literature Search Methods

To answer the proposed research question whether mindfulness-based interventions delivered by primary care providers in the office setting improve negative symptoms in adolescents with anxiety**,** a comprehensive literary search was conducted through various online databases provided by the University of North British Columbia (UNBC) library. The search strategies used were taught by various instructors, librarians and coursework and direction of this paper was developed throughout the UNBC Family Nurse Practitioner (FNP) program. By using the framework provided by Whittemore and Knafl (2005), the initial literature search was conducted using the following five steps: problem identification, literature search, data evaluation, data analysis and presentation.

To complete this literature review, the following search engines were chosen and provided by the Geoffrey R. Weller online library through UNBC: MEDLINE, PsycInfo and PubMed. The previously mentioned databases were chosen to gain a unique perspective from both psychiatric and medical findings of mindfulness interventions along with taking into consideration how these interventions have previously been integrated within the medical field thus far which could provide guidance towards integrating future interventions within primary care. Through utilizing the previously mentioned databases, the following key concepts were utilized for initial search methods: *mindfulness, adolescents, interventions, and anxiety.*

During the initial search related to these terms, other studies were found within the search engine that included adults and interventions delivered both within the hospital and the school system, thus providing needed background information for how mindfulness interventions have been delivered in the past. Supplemental grey literature found through Google search engine was

also utilized to obtain statistics and recommendations offered through government agencies and different health care authorities for guidance related to the prevalence and statistics of mental health issues experienced by adolescents within Canada along with policies directed towards youth and mental health initiatives.

The final search strategy that yielded the most pertinent information related to this paper which was entered into the search engines supplied by the MEDLINE, PsychInfo and PubMed databases. The Boolean term OR was utilized to provide a more comprehensive search to utilize other similar concepts related to these topics of interest. Additionally, the Boolean term AND was chosen to ensure that the major concepts were uniformly found within the same articles chosen for the literature review. The search that yielded the most relevant information related to this literature review included the following: mindfulness OR MBSR OR mindfulness-based stress reduction OR mindfulness intervention AND adolescen* OR teen OR youth AND intervention OR treatment OR therapy AND anxiety OR stress OR anxiety disorder. Prior to submitting this search, advanced search strategies included applying filters which only included articles written on or after 2014, articles that were written in English in addition to specifying that the results were peer-reviewed. This ensured that articles used for the purpose for this paper would be recent research, could be understood by the writer and fact-based as many literary sources online come with false statements and do not necessarily require being fact-checked or peer-reviewed. Upon completing this completed search, MEDLINE produced 180 articles, PsycInfo produced 182 and PubMed produced 89 for a total of 451 articles. The computer program Zotero was used for compiling these articles to keep information organized and for ease of access in detecting duplicates. In the 451 articles that were produced, 144 duplicates were

found through Zotero. Thus, the final articles that were up for consideration for this paper was a total of 307.

After completing this search, an inclusion guide was utilized to ensure that information that was retrieved was pertinent and appropriate for the subject of this paper. The following inclusion criteria related to this search is seen in Table 1 below.

Table 1
Inclusion Criteria of Literary Search

Inclusion Criteria	**Exclusion Criteria**
Inclusion of adolescents between the ages of 10 to 17	No measure of anxiety pre-post treatment
Specific measures or mention of effect on anxiety	Studies solely focused on children under the age of 10 or adults over the age of 18 as many describe the age of 18 as being an adult and no longer an adolescent
Articles in English language	Interventions related to cognitive behavioural therapy
Articles published in 2014 or later	Articles in language other than English
Peer-Reviewed Research articles	Articles published earlier than 2014
Use of mindfulness, mindfulness-based stress reduction (MBSR), acceptance and commitment therapy (ACT) or mindfulness-based cognitive therapy (MBCT)	Articles that demonstrated a proposal for interventions with no inclusion of the completed project or articles that were not peer reviewed

Upon applying the inclusion and exclusion criteria to the 307 articles retrieved from the search, a total of 19 articles fit the criteria for consideration of this literature review. As mindfulness is an emerging intervention being utilized within in the realm of mental health care (Tan, 2015), there is a significant lack of literature when attempts were made to include primary care OR family practice OR community care as direct areas of MBI application through the MEDLINE, PsycINFO and PubMed resources. Therefore, articles were chosen that demonstrated effective integration of MBIs for adolescents in other settings such as schools or clinical mental health outpatient settings. After careful consideration of these articles and

applying the relevance of the research towards the topic of this capstone project, a final total of 8 articles were chosen for the final literature review. Please see Appendix A for the PRISMA diagram developed for the literature search that was conducted. The articles chosen provided a robust background of experiences related to adolescents and the negative experiences associated with anxiety and provided different applications of MBI delivery that PCP can build upon to deliver successful mindfulness interventions within future practice.

Framework for Literature Analysis

To efficiently and effectively organize the data obtained from the previously mentioned search strategy, a framework on analyzing and assessing data is imperative to clearly articulate research findings. One framework found to be applicable and useful in gathering data was the Stetler Model. The Stetler Model (2001) provides a framework for nurses to facilitate evidence-based practice both in institutional or individual levels through five phases: Preparation, validation, comparative evaluation/decision making, translation/application, and evaluation (as cited in Gray et al., 2017). Through these steps, the data was analyzed to identify what previous researchers found when utilizing mindfulness interventions towards youth with anxiety and evaluate whether the data they retrieved provided a significant enough result to promote changes within future primary care practice. Furthermore, by utilizing the Critical Appraisal Skills Programme (CASP) worksheets that can be obtained from https://casp-uk.net/casp-tools-checklists/, articles were chosen for the project based on their reliability and scientific findings. These checklists that are open for the public to use when critically appraising literature for reviews such as these. Ensuring these steps were taken allowed for content analysis of the articles and identification of some recurring themes within the literature which will be discussed in the following chapter.

Chapter 4

Findings

After completing the previously mentioned search strategy, a total of eight articles were used for the purpose of this literature review. The eight chosen articles included: 2 systematic literature reviews (Borquist-Conlon et al., 2019; Dunning et al., 2019), 2 mixed-method pilot studies (Bluth et al., 2016; Crowley et al., 2018), 2 randomised controlled trials (Tan & Martin, 2015; Díaz-González et al., 2018), 1 cohort study (Marusak et al., 2018) and 1 open pilot study (Ali et al., 2017). These articles were chosen in order to answer the research question proposed in Chapter 1 and provided the information required to provide rationale and recommendations for PCPs to begin seeking ways on how to best implement mindfulness-based interventions to improve adolescent's experiences when diagnosed with anxiety. This chapter will provide an analysis of the previously mentioned literature and outlines the findings, strengths, and weaknesses of each study. A literature matrix (Appendix B) was developed to organize data, compare, and analyze findings. The approach used by Whittemore and Knafl (2005) in addition to the previously mentioned Stetler Model (Gray et al., 2017) provided guidance on how to best analyze each article and instructions on how to organize data within the literature matrix. Whittemore and Knafl (2005) also describe the process of data reduction and comparison in order to determine overarching themes found within the literature that addresses similarities in patterns which was completed upon developing the literature matrix (Appendix B). In analyzing the findings of the literature, there were four overarching themes that developed: the benefits of mindfulness on anxiety in adolescents, physiological and other psychological changes after implementing mindfulness, the importance of parental involvement when assessing changes related to the adolescents anxiety, and practitioners demonstrating knowledge of mindfulness.

Effects of Mindfulness on Anxiety in Adolescents

While mindfulness practice brings with it many positive outcomes, one that was most prominently seen within the literature included the benefits seen on negative symptoms associated with adolescent anxiety (Bluth et al, 2016; Borquist-Conlin et al., 2019; Dunning et al., 2019). This section will present evidence related to how mindfulness interventions improved adolescent's negative symptoms of anxiety. Three studies written by Bluth et al. (2016), Borquist-Conlon et al. (2019), and Dunning et al. (2019) provided evidence related to the positive outcomes of MBIs in different settings such as within school or outpatient mental health settings.

The first article related to MBIs and improvement in negative anxiety-related symptoms amongst adolescence was a waitlist-controlled crossover study (embedding qualitative data into intervention design) by Bluth et al. (2016). The research was designed to add to the understanding of how a mindful self-compassion program would affect psychosocial outcomes for adolescents. Two cohorts were chosen to complete the Making Friends with Yourself (MFY) program – a 6-week course delivered in 90-minute sessions lead by a skilled mindfulness practitioner who undertook their own training of mindfulness-delivery, with emphasis on having experience with adolescents (Bluth et al., 2016). Each weekly session covered various topics such as what mindfulness was, role-playing in addition to practicing mindfulness meditations and review of the adolescent brain and changes that follow (Bluth et al., 2016). Qualitative data in addition to scale-based questionnaires were completed by the participants and analyzed multiple psychosocial areas of wellbeing (prior to starting, halfway through the program and immediately following completion). Although Bluth et al. (2016) conducted questionnaires at three different time periods, they did not complete a follow-up assessment for retention and

continued practice following the intervention. Following the intervention, there was compelling evidence with a 95% confidence interval (CI) that showed that increases in self-compassion and mindfulness upon starting the program had predictive ability in reducing anxiety experienced by the participants with an additional average of -2.56 in STAI anxiety scores when compared to the waitlist control after completion of the program (Bluth et al., 2016). In addition, the qualitative data showed that adolescents felt their ability to integrate self-compassion after receiving the MBI provided them with the necessary tools to better manage stressors in their day-to-day lives. For further information, please refer to the literature matrix provided in Appendix B.

Strengths that this waitlist-crossover study brought forward included strong attendance rates amongst cohorts which demonstrated engagement and feasibility for these practices to be integrated within future mental health care settings. In addition, Bluth was a skilled mindfulness practitioner and teacher who practiced and researched mindfulness for 35 years and was able to develop a program better suited to adolescents and their markedly different attention spans in comparison to adults (Bluth et al, 2016). Burke (2010) found that a practitioner's own mindfulness practice directly translates to the efficacy of mindfulness delivery towards patients, highlighting the importance of experience Bluth brought to the study. Since the program was conducted as an after-school program, it could be argued that this form of mindfulness delivery could be adopted within primary care as a group format for patients to complete after school once a week if PCP demonstrated a need within their adolescent populations. Furthermore, Bluth et al. (2016) did not strictly teach mindfulness strategies during these sessions but also found these set times as ample opportunities to provide educational materials related to emotions, self-awareness in addition to the teenage brain. As many schools across Canada focus on issues such as sexual health or substance use, Bluth et al. (2016) provided materials related to mental

wellness and emotional regulation, increasing the adolescents knowledge surrounding mental wellness and setting proper foundations for adaptive psychosocial functioning for the future (Morrish et al., 2018).

Limitations demonstrated within the study conducted by Bluth et al. (2016) included a lack of engagement from the students to perform at-home practices. Bluth et al. (2016) knew this was a shortcoming and suggested that actions such as reminders being sent to the students was important for time-management skills when faced with other commitments such as academic homework, after school sports and programing or socializing with friends. In addition, the sample size of 16 participants in the active-intervention group along with 18 in the waitlist-control was small and found to consist of a mostly female population coming from well-educated/middle class families (Bluth et al, 2016). This could impact the results of the study and provide a lack of heterogeneity needed for accurate depictions of the efficacy of the program due to the uneven gender split in addition to the lack of socioeconomic diversity (Bluth et al., 2016). Finally, there was a mentioned risk of bias associated with adolescents showing improved functioning within negatively-described emotions - this highlights the confirmation bias that adolescents may have answered the way they thought they should instead of their actual emotions (Bluth et al., 2016). Although confirmation-bias is possible, authors addressed this and found the risk to be small given the length of the study and the participants completing questionnaires based on their own individual experiences with no incentives given to suggest otherwise (Bluth et al., 2016). It is also important to note that although Bluth was a skilled practitioner of mindfulness, this ran a risk of bias for the overall study, which was not accounted for within the literature. Overall, Bluth et al. (2016) provided a specifically adolescent-focused

intervention that showed promise for future group mindfulness strategies that could be built upon to help improve psychosocial functioning.

Two of the three meta-analyses included within this literature review also provided rationale evidence related to the benefits of mindfulness-based interventions (MBIs) within various settings to aid in the treatment of anxiety (Borquist-Conlon et al., 2019; Dunning et al., 2019). The purpose of the meta-analysis includes highlighting pooled results together that can ensure trends within the studies are seen as they may otherwise go unnoticed if not pooled together (Borquist-Conlon et al., 2019). The first systematic review conducted by Borquist-Conlon et al. (2019) synthesized evidence to gain a better understanding of the immediate effects of MBIs and long-term effects on anxiety. MBIs included mindfulness-based stress reduction (MBSR) and action-commitment theory (ACT) while also included activities such as present moment and breathing techniques, body scans, relaxation and yoga (Borquist-Conlon et al., 2019). A final sample of 5 articles were chosen and studied the effects of MBIs on children between the ages of 5 to 18 with a mean age of 13.26. All studies included within the meta-analysis were examined to determine the median age for each population group, which was 10.44 to 16.3, thus falling within the applicable inclusion and exclusion criteria for this literature review as studies were not chosen that solely focused on children under the age of 10. This meta-analysis required a specific measurement of anxiety as an outcome to be included within the final data collection through questionnaires or self-reported symptoms (Borquist-Conlon et al., 2019). After statistical analysis of the articles were completed while applying a 95% CI and p value of .004, there was a moderate and positive effect toward anxiety improvement amongst adolescents with a mean g effect size value of 0.62 favouring the MBI versus comparison conditions, which

provided tentative support in the positive effects of incorporating MBIs within various healthcare or community settings (Borquist-Conlon et al., 2019).

Similarly, Dunning et al. (2019) conducted a meta-analysis of randomized controlled trials to determine whether MBIs were efficacious in improving mental health symptoms amongst adolescents. After synthesizing the literature of 33 studies which introduced an MBI compared to either a passive (no comparison) or a control group, Dunning et al. (2019) found that there was a trend of anxiety and stress categories showing greater improvements than the control conditions. In addition, the results for anxiety improvement ranged from small (.19) to small-to-moderate (0.30) effect sizes. When the two meta-analyses mentioned above were compared, Dunning et al. (2019) ensured that the studies indicated the MBI treatment intervention was solely compromised of mindfulness approaches such as MBSR where Borquist et al. (2019) compromised a wider range of diversity in regards to treatment, which interestingly brought similar results in reducing anxiety amongst adolescents. Dunning et al. (2019) also indicated that when patients were exposed to MBIs at a younger age, there was significant change to negative behaviours such as anger and hostility, with small mean effect sizes of 0.27, demonstrating protective safety factors not only towards the adolescent, but towards individuals around them as well. Therefore, with variability amongst the different MBIs that are included within these meta-analyses producing comparable results, this provides PCPs with evolving evidence that mindfulness practices can be safe and effective options of future implementation with adolescents experiencing anxiety within their practice.

The meta-analyses by Borquist-Conlon et al. (2019) and Dunning et al. (2019) provided significant information that helped to answer whether mindfulness interventions aid in the treatment of adolescent anxiety. Dunning et al. (2019) chose to focus on randomized controlled

trials (RCTs) to ensure that studies that came with a lower degree of randomization would not impact the result of measuring anxiety. When completing this literature review, many of the meta-analyses compared a small number of studies, however Dunning et al. (2019) provided numerous studies (33), which further strengthened their argument for MBIs being a feasible option for improving anxiety symptoms experienced by adolescents with this underlying diagnosis.

Although meta-analyses are well-known to be some of the most thorough methods of gathering data, the studies conducted by Borquist-Conlon et al. (2019) and Dunning et al. (2019) demonstrated weaknesses within the data. While necessary precautions were taken, there may have been small elements of confirmation bias occurring within the adolescents as they may have answered the way they felt they needed to. However, many measurements were taken that not only measured anxiety but also assessed other areas of mental improvement (Borquist-Conlon et al., 2019; Dunning et al., 2019). Additionally, both meta-analyses came with a high level of heterogeneity which could be attributed to the varying MBI methods provided within each study that had a lack of similarity and was based on what each individual researcher thought constituted mindfulness. Therefore, the lack of similarities could skew results and impact efficacy of the studies compiled within the data. Borquist-Conlon et al. (2019) also determined that some population groups within their culturally diverse studies did not respond as well as others, demonstrating that MBIs may be more efficacious with certain population groups when compared to others. As PCPs often see individuals from various cultural backgrounds, it is important to incorporate health and wellness strategies that can be well-understood while remaining culturally appropriate.

In summary, MBIs were found to provide small but noticeable benefits amongst adolescents with anxiety-type symptoms (Bluth et al., 2016; Borquist-Conlon et al., 2019; Dunning et al., 2019). Please refer to the literature matrix for further statistical analysis of these findings. These MBIs were not solely focused within North America but also provided within international settings, both in after school and clinical settings (Borquist-Conlon et al., 2019). Not only did this demonstrate feasibility for future implementation, it set the tone for understanding the following theme: what physiological and other psychological benefits were observed amongst adolescents practicing mindfulness?

MBI and Improvements in Physiological and Other Psychological Symptoms Related to Anxiety

Anxiety not only affects the mood of the individual but can also cause negative physiological effects in the human body and mind at a neurobiological level (de la Torre-Luque et al., 2019). Although the primary focus of this literature review was to address mindfulness interventions in the context of improving anxiety in adolescents, the findings revealed potential physiological and psychological changes and benefits. During the literature review, evidence of beneficial physiological and psychological changes of MBI surfaced in three of the articles reviewed (Crowley et al., 2018; Díaz-González et al. 2018; Marusak et al., 2018).

One of the most important findings was produced by Marusak et al. (2018) in the context of testing neural connections during mindfulness though imaging produced by functional magnetic resonance (fMRI) studies. Within this cohort study focused on a neurobiological understanding of the benefits of mindfulness, 42 adolescents with a mean age of 10.3 years old were chosen to participate and came from both economically and racially diverse backgrounds (Marusak et al., 2018). The study focused on how much time were spent in certain states which

included the following: "(1) mind-wandering, (2) attentional awareness of mind-wandering, (3) shift of attention back to the present moment, and (4) focus on the present moment" (Marusak et al.., 2018, p. 212). Upon completing self-rating questionnaires on anxiety and depressive symptoms, 62% of participants exceeded the markers for being diagnosed with anxiety and/or depression prior to the study commencing (Marusak et al., 2018). In follow up after completion of the fMRI scans, the results showed that increased levels of mindfulness were associated with lower levels of anxiety and that more mindful children spent less time in state 2 or mind-wandering (Marusak et al., 2018). Additionally, Marusak et al. (2018) found that mindfulness could serve as a protective factor to reduce risk of developing various psychopathologies which often develop in childhood and adolescence. This was important to note as greater neural flexibility allowed for participants to not get stuck in certain patterns of thinking and remain within the present moment – a key trait of mindfulness practice (Marusak et al., 2018).

Strengths of this study included researchers including a sample of participants that was both racially and economically diverse presenting with various psychiatric backgrounds, thus providing a comprehensive view on how mindfulness could impact different individuals on a physiological level (Marusak et al. 2018). The use of fMRI images allowed for visible evidence of benefits rather than solely relying on patient's own self-reporting. Another strength brought forward within this study was not informing the participants of questionnaires to be completed before or following the fMRI imaging, as previous studies have indicated that this may skew results into participants answering what they feel will please researchers (Bluth et al., 2016). Overall, Marusak et al. (2018) provided a convincing argument towards the benefits of mindfulness within adolescents and the positive link between neuronal connectivity and improved mental wellbeing. With this knowledge in mind, PCPs could better understand the

neurobiological processes that are happening in mindfulness practice. This could aim to be an important teaching point with both adolescents and their parents and/or caregivers if they are unfamiliar with the benefits of continued practice – especially in the context of take-home practice.

Although this study provided statistically significant fMRI evidence that may provide a better understanding potential physiological benefits of mindfulness, it also contained limitations that must be addressed. Firstly, although this literature review addressed that studies would not be included that solely focused on results for patients under 10, participants within this study were as young as age 6, thus potentially skewing results and efficacy. Secondly, although the patient profiles were racially and economically diverse, the overall sample size was small with only 42 participants in addition to there being no randomization or blinding occurring within the study. Finally, the conclusions drawn regarding the neural correlates of mindfulness was based on a correlation-based and not causal-based approach, therefore, more studies focusing on a mindfulness intervention would be needed to confidently say that it is the reason for these neural changes (Marusak et al., 2018). Overall, images brought forth via fMRI results provided an objective and evidence-based argument towards neuronal changes in more mindful states, as many studies previously focused on self-reported symptoms and qualitative data.

While assessing what benefits adolescents in Cordoba, Spain would experience with mindfulness interventions, Díaz-González et al. (2018) found benefits not only surrounding anxiety, but in other psychological factors as well. With participants chosen from outpatient mental health settings, a final number of 80 participants were chosen after applying inclusion and exclusion criteria to participate in a randomized controlled trial (Díaz-González et al., 2018). The intervention chosen was a MBSR program consisting of eight 90-minute sessions which included

formal practice (ie. meditation, body-scan, yoga/hatha exercises), discussions regarding issues affecting adolescents and participants completing home practices. The formal practice condensed MBIs to better suit the attention span of adolescents, with formal practices activities being shortened from the original 45 minutes tailored for adults down to 10 to 20 minutes for adolescents (Díaz-González et al., 2018). This program was alongside an established treatment-as-usual (TAU) program which also served as the control group, consisting of counselling and medications. Questionnaires were administered at baseline and after 8 weeks following assigned treatment assessing scales for mindfulness, self-esteem, stress, anxiety, and other psychopathological emotions such as paranoia, somatisation and obsessive-compulsive tendencies. After completion of treatment, adolescents reported having a statistically significant reduction in trait anxiety and overall lower scores (but not statistically significant) reductions in depression, paranoia, and perceived stress in the MBSR + TAU group when compared to the TAU group. These results were also echoed within the previously mentioned Bluth et al. (2016) article that indicated improvements within social connectedness along with life satisfaction – suggesting that mindfulness has the potential to not only improve mental wellness but important internal and social factors as well.

Identifiable strengths demonstrated by Díaz-González et al. (2018) included having a control group within the study to better understand the differences of the chosen intervention – one of the strengths provided by randomized controlled trials. Additionally, there were equal numbers of female to male patients within the study along with similar diagnostic profiles among the two treatment groups, allowing for higher quality results. Díaz-González et al. (2018) also provided a variety of different questionnaires which allowed for broad understanding of the impact that mindfulness interventions could deliver and help improve upon. The researchers also

understood the need for adapted interventions to better suit attention spans of adolescents, which may be a reason why the retention rates of participants were 75% throughout the program, thus demonstrating feasibility for a voluntary program (Díaz-González et al., 2018). Additionally, Díaz-González et al. (2018) inclusion of home-based practices was an important part of their intervention as this provided sound rationale for the implementation of these types of programs being an appropriate incorporation within mental health facilities, which provides groundwork for other types of health care facilities to begin thinking of different strategies to address mental health concerns.

While Díaz-González et al. (2018) demonstrated findings utilizing a structured program to improve mental health symptoms experienced by adolescents, their study demonstrated some weaknesses. Of note, there was little done to ensure the practice of these interventions were completed at home, which could have further impacted the results of the program. However, Díaz-González et al. (2018) acknowledged this shortcoming and reinstated the importance of take-home practice of MBIs when discussing future program development. Additionally, results were only measured after completion of the program and showed no information regarding benefits of continued practice or how the adolescents maintained the skills they learned. Although trait anxiety showed statistically significant areas of improvement following the intervention, the sample size of participants was low and correspondingly, was not able to produce statistically significant results in other areas measured by Díaz-González et al. (2018). Finally, although the format of this study was a randomized clinical trial, the researchers were not blinded – although this is a difficult task to perform when introducing a mindfulness intervention, it runs a risk of bias towards the results.

The final article demonstrating further psychological and physiological benefits related to MBIs was developed by Crowley et al. (2018), where their pilot open trial aimed to examine the effectiveness of a group mindfulness therapy (GMT) approach within schools for adolescents with anxiety concerns. A group of adolescents were chosen from both 6th and 7th grade classes within a school district in Connecticut after parents completed the Screen for Child Anxiety Related Disorders (SCARED) tool that was mailed to them. Although this study took place within a school system, it is important to recognize that many mental health concerns can be identified within the school settings. This provides the opportunity for teachers to connect with parents or PCPs if there are behavioural or emotional conditions arising, however, may not always occur due to privacy concerns related to the adolescent (Wissow et al., 2016). Crowley et al. (2018) determined that if the children's SCARED scores were greater than or equal to 30, they were able to participate in the study after consent was provided by the parent. Participants acted as their own controls and data was collected ten days prior to the intervention and three days following the intervention. Data collected included answering questionnaires that addressed different aspects of the adolescents lives such as anxiety, anxiety severity symptoms, global functioning and stress. The GMT was comprised of weekly 60-minute sessions conducted after school which included guided and take-home practices, most of which were centered around the MBSR-technique of mindfulness delivery. A mindfulness-trained occupational therapist delivered the program to the 10 participants with the help of a trained psychologist. Upon completion of the program, improvements were seen on adolescent self-ratings of both internalizing (being anxious, depressed, withdrawn or other somatic complaints) and externalizing (delinquent or aggressive behaviour) problems, parents noticed their children improving in internalizing problems as well in addition to youth reporting improved

concentration after completing the program. Furthermore, the feasibility and acceptance of the program was noted as a success as the adolescents who participated indicated they would recommend the program to their friends.

As mindfulness teachings are not often recognized as a formal scope of practice for an occupational therapist (OT), it could be suggested that a variety of health care providers including PCPs could gain the skills required to deliver MBIs within adolescent primary care practice (Canadian Association of Occupational Therapists, 2012). Additionally, a methodological strength brought forward by Crowley et al. (2018) was follow up days after the intervention was completing, demonstrating whether skills and their effects were maintained by the adolescents or not. Various areas of mental and physical wellbeing were assessed to gain a full understanding of the participant's experiences and were delivered in an area that was comfortable to them: their own school. This allowed for ease of transition along with ease of participation as programming was offered after-school, making it a feasible option for adolescents to attend (Crowley et al., 2018).

Limitations that were observed within this study included a small sample size of participants chosen from one school in Connecticut. This had the potential to impact the results and prevented the authors from using a diverse group of participants to study. In addition to the sample size being small, there was also no control group within the study to base findings from, which made it more difficult to demonstrate a direct cause-and-effect relationship between mindfulness and improvement of symptoms. While Crowley et al. (2018) provided trained professionals to deliver the GMT, two of the authors of the study were also group facilitators – this could lead to questioning the validity of the results and question a level of bias within the literature. It is however important to note that these authors were not involved in the pre- or post-

treatment assessments. Finally, the Crowley et al. (2018) indicated that there may have been an element of social desirability amongst the adolescent participants, indicating that they answered questions in manners which they thought the researchers or facilitators would want them to answer.

While analyzing the previously mentioned articles, it was important to highlight that mindfulness interventions not only could improve negative symptoms associated with anxiety but could help to ameliorate other areas of mental wellness along with providing evidence towards improvements of underlying physiologic processes. Mindfulness is a skill that is personalized and individualized to each person, however, having a strong support network to continue to encourage practice and notice results also helps to shape and re-instate the efficacy when adolescents may not see it within themselves.

The Importance of Parental or Caregiver Support During Treatment

Although mental health concerns can seem as an individualized problem, it rarely only affects the individual, but also others around them. A theme seen within this literature review was the importance of involving parents or caregivers within the studies to gain a better understanding of the impacts that these interventions were having on the adolescents and their functioning. A caregiver as defined by John Hopkins Medicine (2020) is an individual who tends to the needs and requirements of a person with a short- or long-term limitations related to an illness or disability and can be a valuable source of information due to the length of time they spend with the individual they are taking care of. The first study conducted by Ali et al. (2017) sought to understand the feasibility of a MBSR and whether the intervention reduced the burden of somatic symptoms for adolescents with varied chronic pain diagnoses. Within this pilot cohort study, most patients chosen were between 12 to 18 years old (with one 10 year old) and were

diagnosed with different physical diagnoses however were excluded if they utilized narcotics, had an autoimmune and/or inflammatory condition, or a serious illness within the past 90 days. The study participants attended 1.5-hour long group sessions for eight weeks, in three different cohorts, in addition to a retreat and performed take-home assignments which were compromised of 15 to 20-minute guided practices. Parents were encouraged to be involved by attending their own separate group which provided information and helped them gain familiarity for the MBSR intervention. Participants were also provided with the weekly guided meditations however were told not to encourage or practice the MBSR with their children participating in the study. After assessing final 15 participants within the study at baseline, eight weeks and twelve weeks, scores showed improvement in the domains of mindfulness, anxiety, stress level and quality of life in over half the patients. Additionally, parents reported improvements within their children's quality of life following the intervention and one mother reported improvement in her son's school attendance despite his chronic health concerns. Both participants and their parents indicated that the group format allowed for a sense of camaraderie since it made them aware that other adolescents experienced similar health challenges and for parents, that other parents experienced similar circumstances as them. Finally, a major take-away from this study showed that there was a statistically significant improvement in anxiety demonstrated 12 weeks after the start of the program by both the participants and their parents alike – indicating that MBSR strategies had the potential to leave long-lasting impacts for the adolescent's futures.

The implementation of MBIs within a clinical outpatient setting completed by Ali et al. (2017) provides evidence for PCPs to integrate within their own practice as adolescents experiencing both physical and mental health concerns are often seen within primary care settings and are at higher risk of developing either chronic pain or anxiety conditions in

adulthood (Jastrowski Mano, 2017). An additional strength of Ali et al. (2017) program was adapting the intervention to mirror the needs of adolescents, thus adjusting the session times to better suit the adolescent's attention span yielding an 83% retention rate throughout the study. The inclusion of parents reporting their findings provided more proof of symptom improvement that may have otherwise been missed and their findings aligned well with what the participants themselves felt they were experiencing. With the encouragement of parents to attend concurrent groups offered by this program, parents were found to gain a better understanding of mindfulness and were provided a level of stress-reduction amongst their own lives (Ali et al., 2017). To reduce recall bias, Ali et al. (2017) was one of few studies that sent reminders to participants to practice mindfulness at home. Finally, by undertaking a mixed methods approach, Ali et al. (2017) provided a more complete picture of personal feelings and experiences of participants related to MBIs.

Limitations within the study produced by Ali et al. (2017) includes the small sample size that participated within the study – 15 participants. As the participants fell within a small and specific demographic, the findings of this study are difficult to generalize to adolescents not experiencing chronic pain concerns. One notable weakness was the $200 incentive provided by the researchers upon completion of the study – this could arguably be seen as *undue influence*, a concept defined as "an offer of an excessive, unwarranted, inappropriate or improper reward or other overture in order to obtain compliance" (Nyangulu et al., 2019, p. 2). However, within most medical research, study participants participate voluntarily after being informed of the risks and benefits of the study (Nyangulu et al., 2019). Another notable weakness was the lack of randomization or blinding of participants along with a lack of comparison group. Finally, the grouping of adolescents was mostly Caucasian and from middle-class families, misrepresenting

what some PCPs may see in practice as many adolescents may not come from socioeconomically advantaged backgrounds or may not have parents or caregivers that can attend these sessions.

The final article within this literature review that demonstrate the importance of parent or caregiver involvement with assessing the benefits of mindfulness practice is Tan and Martin's (2015) randomized controlled trial. Their study aimed to understand how the Treating the Adolescent Mind (TAM) program, a mindfulness program developed by Tan and Martin in 2012, would impact psychological symptoms experienced by adolescents compared to a treatment as usual cohort of participants. The TAM intervention was a five-week program with one hour sessions, composed of condensed meditation, skill presentation (which focuses on sensory exercises and drawing attention), experiential exercises and group work such as discussing the homework provided with the program (Tan & Martin, 2012; Tan & Martin, 2015). Participants in this study were recruited from different community child and adolescent health clinics and were between the ages of 13 to 18. Participants required a primary psychiatric diagnosis along with no other previous mindfulness training but could not be actively suicidal, abusing substances or have any organic brain syndromes that could impact their ability to comprehend the material. Parents and caregivers of the adolescents were also provided with pre-course material demonstrating the rationale for TAM, attendance requirements along with outlining the homework requirements. The final number of participants was 80 (43 in TAM+TAU and 37 for TAU), compromised of 75% female participants. Both parents and participants completed pre-test, post-test and 3-month follow up questionnaires in areas such as anxiety, depression, self-esteem, resiliency in addition to other psychological behaviours. After analyzing the data, Tan and Martin (2015) found the TAM group of participants experienced greater improvements in all areas except for resiliency, which was reported by both participants

and their parents in post-test and 3-month follow-up when compared to the TAU group. The evidence indicated that the mindfulness intervention improved anxiety and demonstrated significant improvements in adolescent's self-esteem and emotional regulation. Furthermore, Tan and Martin (2015) indicated that there was a marked 16.51 point decrease in psychological distress with the mindfulness control group that was sustained during the follow up with an end *p* value of <0.001. This decrease in psychological distress demonstrated safety for the adolescent's mental wellbeing as psychological distress attributed with anxiety has been shown to lead to depression, hypertension and other behavioural disorders or impulses (Ma & Fang, 2019; Tan & Martin, 2015).

Methodological strengths of the Tan and Martin (2015) study included being one of the only studies within this literature review that continued to monitor results and efficacy of the program three months after completion. The extended monitoring period provided more longitudinal data that supported the hypothesis that the MBI-focused TAM program would improve mental health outcomes. Additionally, having the parents/caregivers provide feedback specifically within the Child Behaviour Checklist (CBCL) provided the opportunity for parents/carers to share their observations of the adolescent participants, and to gain a fuller understanding of the MBI the adolescents were learning. Since the TAM program was composed of group discussions, it allowed for participants to connect with one another while being accepting of one another's struggles – especially since all participants had diagnosed psychiatric conditions. Group sizes were kept small and intimate for the purpose of this study (between a minimum of four and maximum of twelve participants) to ensure that each student had the time and attention necessary to gain the most benefit (Tan & Martin, 2015).

Finally, although Tan and Martin (2015) were some of the first researchers to develop a unique mindfulness program, their study did have limitations. First, like many of the articles within this integrative literature review, the sample size was small with 80 participants. Of these participants, 75% were female, potentially introducing selection bias that could impact the results of the study (Tan & Martin, 2015). Secondly, this study was rooted in relying on self-reporting data, which could lead to skewed results due to "bias and social desirability" (Tan & Martin, 2015, p. 54), meaning the individual answers the questions in which they believe the researcher or examiner want them to rather than their own experience. Furthermore, it was suggested by Tan and Martin that a difference in therapists between the TAM+TAU and TAU groups could have also influenced the results had one therapist been more enthusiastic and engaging than the other. However, the work that participants completed on themselves were exactly that, their own work, performed both during their taught sessions and sessions at-home where no therapist was present. Using condensed versions of the adult mindfulness training in addition to providing reminders and parental involvement throughout the treatment provided valuable insight into how these condensed activities could be effectively integrated within future primary care practice. Tan and Martin (2015) had experience in knowing how to properly adapt MBIs to suit adolescents to ensure success, which brings us to our final theme seen within the integrative literature review: practitioners demonstrating knowledge of mindfulness.

Practitioners Knowledge of Mindfulness Interventions and Practice

Throughout much of the research completed within this literature review, practitioners providing the MBIs were well-educated and knowledgeable surrounding how to properly teach these interventions in addition to having a sustained mindfulness practice themselves (Ali et al., 2017; Bluth et al., 2016; Crowley et al, 2018; Díaz-González et al., 2018; Tan & Martin, 2015).

In five studies that were analyzed, MBIs were delivered through trained professionals that received mindfulness training, however, this is not a current requirement for PCPs (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018; Tan & Martin, 2015). It has been found that PCPs who received mindfulness training believed that the quality of their mental health visits with patients were improved as they are more engaged with their clients rather than feeling as though they are conducting their visits in a linear or autopilot-type manner - which could be argued why the studies conducted by the skilled mindfulness practitioners listed above held relatively high attendance rates (Bluth et al., 2016; Crowley et al, 2018; Tan & Martin, 2015; Whitesman & Mash, 2016). These researchers also understood the importance of being well-educated surrounding the effective delivery of MBIs since not only were they teaching the adolescents, but were also providing education to parents and caregivers who chose to better understand mindfulness for themselves (Crowley et al., 2018; Tan & Martin, 2015). In doing so, researchers provided a patient and family-centered delivery approach to MBI integration, which PCPs can learn from and reinforce within their own primary care practice. As mindfulness interventions are only as effective as the practitioners who perform it themselves and believe in the efficacy of the practice, this may be an area of interest for PCPs to receive further training or education within to provide further mental health interventions towards adolescents (Beach et al., 2013; Fulweiler & John, 2018)

After analyzing the articles related to MBIs, the articles indicated that MBIs were making a difference in the lives of adolescents who had the privilege of learning about the techniques through reduction in anxiety levels in addition to demonstrating feasibility and practicality in their day-to-day functioning (Bluth et al., 2016; Crowley et al., 2018; Borquist-Conlon et al., 2019; Dunning et al., 2019; Tan & Martin, 2015). Ali et al. (2017) concluded that they felt MBIs

were a feasible option to deliver to adolescents within their cohort with no mentioned negative consequences. Interestingly, while analyzing all of the literature included within this integrative literature review, researchers did not disclose any negative consequences associated with adolescents practicing MBIs, although it could be argued that perhaps researchers were not testing for negative outcomes associated with mindfulness delivery (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Borquist-Conlon et al., 2019; Díaz-González et al., 2018; Dunning et al., 2019; Marusak et al., 2018; Tan & Martin, 2015). After careful analysis, mindfulness was proven throughout the studies to be an intervention that was easily integrated into the adolescent's lives while also providing valuable information to their parents and creating stronger social networks to share experiences amongst (Ali et al. 2017; Crowley et al., 2018; Tan & Martin, 2015).

Through analysis of the research findings, the following adolescent anxiety assessment scales were seen used at a higher frequency within the studies and provided valuable information towards trends related to anxiety symptomology during MBI implementation: a) Screen for Child Anxiety Related Disorders (SCARED), b) State-Trait Anxiety Inventory (STAI), and c) Multidimensional Anxiety Scale for Children (MASC) (Ali et al., 2017; Bluth et al., 2016; Borquist-Conlon et al., 2019; Crowley et al., 2018; Díaz-González et al., 2018). The SCARED and STAI tools can be found within Appendix C of this paper. The MASC tool was unable to be located for public access for use within this paper and therefore was not included. These assessment tools provide PCPs with the ability to make evidence-based decisions related to the trajectory of anxiety that are specifically focused on adolescents and the unique challenges they face. One of the benefits of the MASC tool observed within the literature review was the ability to also be completed by the parent, therefore giving further information related to the anxiety

experienced by adolescent patient and trends that may be occurring if implementing a new treatment intervention (Ali et al., 2017). No matter which assessment tool is used by the PCP, the goal is to monitor the progress and benefits of the chosen intervention for the adolescent, such as MBIs, and provide data to show adolescents if they are feeling as though their mood remains unchanged (Connolly et al., 2011).

Although many of the previously mentioned literature reviewed in this paper included small sample sizes, meta-analyses of grouped benefits helped to strengthen the argument that MBIs should be incorporated in primary care providers practices when treating adolescents with anxiety (Borquist et al., 2019; Dunning et al., 2019). Although there are multiple studies providing strong rationale towards implementing MBIs in secondary or tertiary settings, primary care settings have fewer resources available but continue to be an emerging topic of interest (Demarzo et al, 2015a). However, in a meta-analysis conducted by Demarzo et al. (2015a), MBIs within primary care were shown to provide improvements in both mental wellbeing and quality of life, even if practitioners had no formal training. Primary care settings are viewed as an optimal location to begin MBIs because the care delivery is continuous, person-centered and lays focus on preventative measures patients can take in order to prevent further disease progression (Demarzo et al., 2015b). The following section aims to discuss actions towards mindfulness integration within primary care and provides thoughtful discussion and recommendations to help foster a sense of calm and control during moments of stress and anxiety experienced by adolescents today.

Chapter 5

Discussion and Recommendations

The purpose of this literature review is to answer the question "can mindfulness-based interventions delivered by primary care providers in the office setting improve negative symptoms in adolescents with anxiety?". As mindfulness was found to be an emerging and increasingly researched method in helping adolescents manage their anxiety symptoms, a discussion is required to synthesise the literature to answer the research question posted in this integrative literature review. The findings presented in this paper provides PCPs with current evidence related to integration of MBIs into primary care practice. This section aims to synthesise the evidence related to the effectiveness of MBIs on anxiety symptoms experienced by adolescents, and how these interventions can be implemented into primary care.

Concepts of Mindfulness That Guide the Integration Within Practice

Although the previous findings section provided evidence regarding the positive effects of mindfulness on adolescent anxiety, a discussion surrounding what concepts guide its success upon implementation are important for PCPs to understand prior to initiating MBIs within practice. As discussed within the background, Burke (2010) found that attitude, attention and intention were key concepts of mindfulness that were observed being performed within the studies included in this integrative literature review (Bluth et al., 2016; Marusak et al., 2018; Tan & Martin, 2015). Mindfulness practice required the participants to direct their thoughts in performing a thoughtful and sustained practice that required significant self-regulation by the adolescent, which are key factors in the success of MBIs (Bluth et al., 2016; Burke, 2010; Marusak et al., 2018). These concepts are reiterated by Marusak et al. (2018), as they provide clarification regarding the significance of mind-wandering within their f-MRI studies and present

neurophysiological evidence that the more mindful an adolescent is, the less their thoughts cycle – a key symptom of anxiety.

If an individual develops negative emotions regarding a hypothetical situation that makes them experience anxiety or are reminded of a time that caused them great distress – it is more than likely that anxiety will cause physiological symptoms such as an increased heart rate, perspiration or elevated blood pressure (McCance & Huether, 2019). When individuals begin to practice and implement MBIs into their day-to-day lives, it works at providing a perceptual distance from various psychological or somatic stimuli which in turn can improve the negative thinking patterns that are deeply rooted within individuals experiencing anxiety (Marusak et al., 2018; Shonin et al., 2015). Much of the research included within the findings also demonstrated improved self-compassion, improvement with other co-morbid mental health conditions such as depression and improvements in concentration – all of which can be attributed to the present-moment awareness culminated within a sustained mindfulness practice (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Dunning et al., 2019; Tan & Martin, 2015). However, throughout much of the research, MBIs were delivered via skilled practitioners, which warrants further discussion regarding why this is so important to ensure success (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Tan & Martin, 2015

Primary Care Providers Preparing for Mindfulness-based Interventions Within Practice

Since much of the literature has focused on the adolescent's needs to cultivate their own mindfulness practice, this would be possible without PCPs first undertaking their own research and education to obtain the knowledge and skills necessary to provide MBIs in practice. Five of the articles included within the integrative literature review explicitly stated the use of a skilled mindfulness-practitioners that undertook their own mindfulness training in order to effectively

deliver MBIs to adolescents (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018; Tan & Martin, 2015). These studies suggested that MBIs are more successful when those providing them have a full understanding and hold their own personal experience with mindfulness practice. It is important for PCPs to fully grasp the meaning of mindfulness and prepare for their own journey first before teaching mindfulness to adolescents (Burke, 2010). This is an important aspect to understand for PCPs because if there is a lack of education prior to starting these interventions, unintentional harms may arise through either patient, provider, or program related factors (Baer et al., 2019). Examples of these unintentional harms include: a) patient factors consisting of stress due to meditation or emerging negative emotions such as being reminded of trauma causing a negative impact on emotions, b) program factors can include intensity of the intervention, and c) provider factors can include a lack of empathy or education for the practitioners providing the intervention towards their patients (Baer et al., 2019).

To safeguard from potential harms related to provider and program factors, there are many options available to PCPs to begin and strengthen their own skills to effectively integrate MBIs within their own practice. There are resources such as books available such as *A Clinician's Guide to Teaching Mindfulness* by Wolf and Serpa (2015), and online courses delivered as weekly sessions through resources such as The Canadian Mindfulness Institution (TCMI) that require participants to complete a mindfulness training course, after which the option of completing an applied mindfulness teaching course for adolescents from the ages of 12 to 18 is offered (TCMI, 2020). As PCPs are required to complete continuing education as a standard of practice, many mindfulness training courses are available through virtual weekly evening seminars and fall within a reasonable price range (TCMI, 2020; VanNieuwenborg et al.,

2016). These mindfulness educational opportunities can be beneficial for the practitioner but also provide the ability for the PCP to share new knowledge with colleagues, thus fostering an environment of mutual learning. Upon taking approaches to become more mindful in their practice, PCPs felt they provided stronger patient-centered care and maintained a positive atmosphere that allowed for their patients to feel empowered in making their voices heard in various areas that were causing them distress or worry (Beach et al., 2013).

As mental health visits can often be emotionally draining for both the PCP and the patient, it is as important for the PCP to take care of their own mental health and coping in addition to the adolescent in need. PCPs that were introduced to brief mindfulness interventions for themselves experienced decreased feelings of burnout and stress and improved feelings of self-compassion (Schroeder et al., 2019). Even though mindfulness work can take time, inner mindful transformation among PCPs can provide benefits to themselves along with their patients and is a key requisite prior to becoming a mindfulness teacher (Whitesman & Mash, 2016). PCPs also have the option to refer adolescent patients to community or other mental health professionals for mindfulness-based or other interventions. For PCPs with significant numbers of adolescent and other patients suffering from anxiety conditions that may not have timely access to mental health services, providing MBIs in the primary care office setting can be a timely intervention that is part of the overall plan of care (Malla et al., 2018).

Incorporating Brief Mindfulness Interventions During Adolescent Primary Care Visits

Throughout this literature review, the effects of MBIs on adolescent anxiety and wellbeing have been thoroughly addressed, with little to no known negative side effects (Ali et al., 2017; Bluth et al., 2016; Borquist-Conlon et al., 2019, Dunning et al., 2019; Tan & Martin, 2015; Wong et al., 2018). Due to time constraints often seen within primary care along with a

lack of available funding and resources for PCPs to offer full MBSR, MBCT, MCT or ACT interventions, brief MBIs are an option to begin to integrate mindfulness practice within primary care (Schumer et al., 2018). Brief MBIs may be viewed as a suitable option as they can be integrated within the average 15.7-minute appointment time of a PCP (Tai-Seale et al., 2007).

The first step in addressing anxiety amongst adolescents is providing education surrounding common stressors and validating these feelings for the adolescents as mental health literacy is not often taught within schools and helps to reduce stigma associated with mental health disorders (Malla et al., 2018). Educational components encompassing mental wellness, issues surrounding adolescence, and the developing adolescent brain were offered in a number of the studies included within this integrative literature review and was an important first step prior to initiating the MBI (Bluth et al., 2016; Díaz-González et al., 2018; Tan & Martin, 2015). Once this education component has been provided, addressing healthy coping skills and psychotherapeutic interventions fall within first line treatments of adolescent anxiety (BC Guidelines, 2010). Although mindfulness is not specifically indicated within the BC Guideline (2010), the source has not been updated since 2010 and provides some direction for other cognitive-based interventions such as CBT which hold many similarities to MBIs but with it also have downfalls such as long wait times for treatment groups or parental time constraints to fit group-based treatment within day-to-day activities (Britton et al., 2017; Fulweiler & John, 2018).

When choosing what brief MBIs may work well for adolescents, it is important to first obtain their consent for treatment after providing education while sharing the PCPs own experiences with mindfulness practice (Beach et al., 2013). Some of the more approachable mindfulness techniques that can be introduced during initial visits include deep breathing techniques or mindful breathing, mindful walking, and meditation - many of which were

included as brief MBIs practiced within studies included within the integrative literature review (Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018; Stephens, 2019; Tan & Martin, 2015). Knowing this, PCPs can begin to incorporate brief interventions for adolescents such as deep breathing, mindful meditation or body scans during their regular appointments and promote these practices being completed within the home or school settings (Stephens, 2019; Tan, 2015).

Even if MBIs are brief in nature, the duration of participant training does not necessarily determine the efficacy of the intervention, and mindful transitions within the brain promote improvement of negative symptoms related to anxiety (Marusak et al., 2018; Schumer et al., 2018). Studies included within the integrative literature review offered condensed versions of MBIs such as mindful meditation and body scans that were formally practiced in 10 to 20 minutes, which could fit within a PCP's allotted appointment time (Díaz-González et al., 2018; Tan & Martin, 2015). Another option for PCPs to consider when introducing MBIs to adolescent patients is the use of various mindfulness applications on technology such as smart phones which provide an interactive and independent learning experience, further reinforcing the TSE in that they are taking actions to improve their wellbeing (Bandura, 1977; Nunes et al., 2020). Similar methods of take-home mindfulness practices were also recommended and integrated within MBI programs delivery by researchers within the literature review (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018, Tan & Martin, 2015). As many adolescents today are technology-savvy and spend much of their time using electronics such as phones, this may offer an additional way to incorporate MBIs in their day-to-day lives (Nunes et al, 2020). Use of these electronic options provide an area for PCPs to conduct future research, however, are outside the scope of this paper.

When brief MBIs are introduced within clinical primary care settings, adolescents have been shown to not only have improved psychological function but as well improve in other cognitive areas such as improved attention and academic scoring, thereby paving the way for a successful future as an adult (Crowley et al., 2018; Perrier et al., 2020). While considering the busy pace of a PCP practice, researchers have found that even brief fifteen-minute guided mindful meditation sessions introduced within care settings have allowed the meditators to reduce the amount of negative or repetitive thinking patterns, key symptoms of an anxiety diagnosis (Edenfield & Saeed, 2012; Marusak et al., 2018). By providing opportunities for adolescents to practice MBIs independently, Bandura's (1977) TSE is again reinforced by providing opportunities for independent practice that lead to successful experiences, which reinforces an adolescent's sense of self-efficacy and resilience. Although adolescents must be proactive when making decisions to improve their own mental health, the support of loved ones is equally as important and should be addressed during primary care visits (BC Guidelines, 2010).

Involvement of Parents and/or Caregivers During Adolescent Mental Health Visits

The importance of involving parents and/or caregivers throughout the MBI journey of an adolescent did not go unnoticed within this integrative literature review (Ali et al., 2017; Crowley et al., 2018; Tan & Martin, 2015). As parents and caregivers are often seen as invaluable sources of information related to the development and day-to-day functioning of the adolescent, they are often one of the first people to notice an acute change in the adolescent's behaviours or mannerisms (BC Guidelines, 2010; Crowley et al., 2018; Patton et al., 2016). Parents and/or caregivers are valuable sources of information prior to initiating treatment such as MBIs, they also provide a further source of assessment data related to the benefits of the MBIs

on the adolescent when parental forms of assessment tools are completed (Ali et al., 2017; Crowley et al., 2018, Tan & Martin, 2015).

As the goal of the PCP is to deliver care to the adolescent that remains patient-centered, the support of other influential members in their life such as parents or caregivers serve as key role models in developing healthy coping techniques (Patton et al., 2016). This also provides an opportunity for parents and/or caregivers to learn more about MBIs and make a transition towards more mindful parenting when they are included within their child's primary care visits, thus reducing stress in their own lives with the possibility of a healthier, less stressed home life for the adolescent (Ali et al., 2017; Harnett & Dawe, 2012). Parents feeling that they were becoming more mindful after being introduced to the adolescent's MBI program was an important qualitative finding discussed by Ali et al. (2017) and reiterated the importance of parental and/or caregiver involvement. As PCPs, the ability to perform joint visits for an adolescent experiencing anxiety may also provide knowledge and education for the parents who may also be suffering from mental health conditions as family history plays a significant role within the development of adolescent anxiety disorders (Racey et al., 2018; Voltas et al., 2019). However, the PCP must consider certain pushbacks from adolescents as this can be a delicate and transitional period in their lives, and parents or caregivers may be viewed as a major stressor or contributor to their anxiety (van Oort et al., 2010). Due to the trajectory of adolescent growth and development thoroughly discussed within the background, PCPs must be prepared for these guards developed by the adolescents as many may attempt to gain independence by distancing parents and/or caregivers (Malla et al., 2018). As researchers were well-educated on the unique challenges adolescents face, they determined that involvement and consent of parents/caregivers was important to monitor for any negative changes in behaviour while providing parents and/or

caregivers with the needed education to better understand MBIs and why these interventions may be a useful tool for improving anxiety (Ali et al., 2017; Crowley et al., 2018; Tan & Martin, 2015). Because parents and caregivers play a key role as a support person for the adolescent experiencing anxiety, they may also provide invaluable data surrounding improvements seen within the adolescent's psychological and day-to-day functioning – which can be thoroughly assessed by the PCP during in-office visits (Crowley et al., 2018).

The Utilization of Standardized Assessment Tools for Adolescent Anxiety

To properly determine whether certain interventions such as MBIs are effective, specific validated assessment tools need to be used that address these concerns in the context of an adolescent and the unique struggles they face (Connolly et al., 2011). As previously mentioned in the findings, standardized tools such as the STAI, MASC and SCARED were most often utilized to conduct valid assessments related to the adolescent's anxiety trajectory (Ali et al., 2017; Bluth et al., 2016; Borquist-Conlon et al., 2019; Crowley et al., 2018; Díaz-González et al., 2018). Within these studies analyzed in the literature review, researchers completed thorough assessments of anxiety prior to initiating interventions as well during and following the intervention, which were appropriate in determining which adolescents would benefit most from the intervention in addition to assessing the severity of their symptoms (Ali et al., 2017; Bluth et al., 2016; Borquist-Conlon et al., 2019; Crowley et al., 2018; Díaz-González et al., 2018). This is a crucial step for PCPs to take when determining whether a MBI is useful or if anxiety is severe and at risk for other comorbidities such as depression or suicidal ideation, thus requiring referral to more emergent resources such as psychiatrists or tertiary hospitals (Sisler et al., 2020). These referrals are completed on a case-by-case basis with the professional assessments conducted by PCPs within primary care visits.

Within the primary care setting, there is a seven-point tool used to screen for generalized anxiety for the general population called the Generalized Anxiety Disorder scale (GAD-7) that practitioners may find easy to use, however, does have questions related to anxiety affecting job performance and requires adolescents to think of their emotions over the past 2 weeks, which may not be entirely suitable given their shorter assessment spans (Sapra et al., 2020). The use of tools such as the MASC, SCARED and STAI tools have proven to be sensitive and specific towards youth anxiety and provide a thorough tool that provide adolescent-specific questions as opposed to more generalized tools such as the GAD-7 (Ali et al., 2017; Connolly et al., 2011; Crowley et al., 2018; Díaz-González et al., 2018; Wehry et al., 2015).

A structured set of assessment tools are crucial for maintaining continuity of care and accurate follow up by the PCP as significant changes or differences within anxiety could be caused by underlying physical conditions such as hyperthyroidism, warranting further workup and diagnostics (Connolly et al, 2011; Wehry et al., 2015). These assessment tools also provide helpful information related to the benefits of sustained mindfulness practice, as adolescents may have difficulty expressing the changes they feel are occurring internally. Additionally, these tools serve great purpose in determining whether there is a stall or worsening anxiety levels, warranting increased treatment such as increasing the number of visits or perhaps involvement of adolescent psychiatric services. As PCPs are providing more adolescent-centered mental health visits than any other health profession, early management of anxiety is crucial in order to begin providing brief interventions that can improve negative symptoms with the aim of decreasing the chances of adolescents experiencing ongoing anxiety into adulthood (Honigfeld et al., 2017; Malla et al., 2018).

Feasibility and Safety Within Mindfulness Practice

When considering the integration of a new intervention into practice, especially in an area as delicate as mental health, a PCP must have confidence that the treatment of choice is adaptable and safe to use with the ever-changing mind of an adolescent. The findings of this literature review revealed evidence that MBIs demonstrated feasibility and acceptability within their research settings with adolescents commenting how they would recommend MBIs to their peers (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018). However, this admittedly did not include primary care settings, but did include other clinical practice settings (Ali et al., 2017; Díaz-González et al., 2018). When adolescents are taught the skills related to MBIs that include becoming present and aware with their thoughts, they are better able to redirect themselves when these thoughts become self-critical or harmful, therefore improving self-compassion and kindness (Bluth & Blanton, 2014; Bluth et al., 2016). This manner of protecting one's own mind from negative thought patterns (commonly seen in anxiety) further encourages the Theory of Self-Efficacy as previously mentioned in Chapter 3 (Bandura, 1977). By providing a safe space such as PCP's office to practice coping skills such as MBIs, adolescents are given the opportunity to reduce vulnerable feelings associated with stress as explained by Bandura (1977).

After analysis of the literature was conducted, protective safety factors were viewed in two of the research studies, demonstrating a reduction in negative emotions such as anger and hostility amongst adolescents experiencing anxiety in addition to a reduction in psychological distress (Dunning et al., 2019; Tan & Martin, 2015). These protective psychological safety factors not only protect the adolescent's mental wellbeing during their current transitional growth state, but positive results were analyzed as being sustained during 3-month follow up of the intervention (Tan & Martin, 2015). Within both the clinical and school settings where these

interventions occurred, there were no mention of any negative consequences associated with mindfulness practice and were deemed a feasible option for adolescents experiencing anxiety as echoed by the high retention rates during the interventions (Dunning et al., 2019; Tan & Martin, 2015). Although MBIs may be viewed as a feasible option for outpatient or school settings, the time constraints associated with MBI-integration in primary care must be addressed to better understand what steps PCPs can take to ensure successful implementation within their own adolescent practice.

Time constraints within the primary care provider role

A primary care setting is well known for being a fast-paced area of care delivery, which can prove challenging for thorough mental health visits. To ensure feasibility within practice, PCPs must ensure that a reasonable appointment slots are provided to their adolescent patients to first assess the initial complaints of anxiety, provide education surrounding the subject, then subsequent visits to introduce interventions such as mindfulness which have been proven to demonstrate improvement in negative symptoms and improve overall quality of life (Ali et al., 2017; Crowley et al., 2018). These initial appointments are key in fostering a trusting relationship amongst the PCP, the patient, and their parent and/or caregiver to develop a plan of care that is attainable and able to be integrated within the adolescent's day-to-day life.

General research into mindfulness thus far has determined that time constraints and reimbursement for MBIs are indicated as significant barriers towards implementation within primary care (Fulweiler & John, 2018; McGuire et al., 2016). Certain PCPs in Canada may be advantaged in this setting as they may not use a fee-for-service model and may be able to provide longer appointment times for adolescents requiring MBI-based appointments for their anxiety (British Columbia Nurse Practitioner Association, 2016). When introducing MBIs within

practice, a discussion informing what MBIs are with administrative support such as medical office assistants may help to provide clarification regarding the need for longer visits and help cultivate a better understanding on why this is required for appointments in order to ensure success (McGuire et al., 2016). These time-adjusted appointments are conducted on an individual basis depending on the adolescent and is at the discretion of the PCP.

Although the feasibility of MBSR strategies within school or clinical outpatients was viewed as a success in many of the research findings, this may be a different case for PCPs who wish to introduce brief mindfulness interventions within their own practices (Ali et al., 2017; Bluth et al., 2016; Díaz-González et al., 2018; Tan & Martin, 2015). As PCPs generally have appointment times of 10-30 minutes rather than hour-time slots available for the various MBIs that were introduced within the literature, the condensed time periods allow for assessment of the adolescent's anxiety per visit and provides time to discuss different brief mindfulness approaches that can begin to be incorporated (Tai-Seale et al., 2007). A thought provided by Demarzo et al. (2015b) also suggested that national health care systems could provide incentive awards to practitioners who provided MBIs within their practice or to universities that include mindfulness teachings within their curriculum, therefore encouraging implementation in primary care practice. Additionally, to ensure feasibility and attainability, the PCP could provide a step-wise approach to MBI delivery towards the adolescent patient, providing more structured and intensive sessions for those scoring higher in areas of anxiety, rather than over-loading or overburdening the patient with initial complaints of anxious thoughts (Demarzo et al., 2015b).

While the discussion thus far has provided a synopsis of what is known regarding mindfulness and how MBIs can begin to be integrated within adolescent PCP practice, recommendations are required to better understand how to effectively integrate these

interventions within primary care. After compiling the evidence that has been discussed, the following section provides further clarity on next steps PCPs can take to effectively integrate what is known surrounding mindfulness and anxiety to improve the negative symptoms experienced by adolescents with anxiety.

Recommendations

This literature review shows promising data related to the benefits of implementing MBIs for the treatment of adolescent anxiety. With these benefits come many questions as to how PCPs can begin to incorporate these MBIs within their practice to ensure a positive result when treating adolescent anxiety within primary care. After an extensive search of the available literature and an integration of the findings, the following recommendations have been developed to inform the integration of MBIs within professional practice and are found within Table 2. The recommendations aim to clarify and provide rationale for the benefits of mindfulness and provide next steps that PCPs can begin integrating within their own practice.

Table 2

Summary of Recommendations for Primary Care Practice

Recommendation	Supporting Literature	Implementation within PCP practice
Using standardized tools to measure the efficacy of mindfulness interventions on anxiety severity	Ali et al. (2017) Bluth et al. (2016) Borquist-Conlon et al. (2019) Crowley et al. (2018) Díaz-González et al. (2018)	- Create list of go-to anxiety assessment tools for adolescents within practice (ie. STAI, MASC, SCARED assessment tools) - Ensure adequate family mental health history/HEADSSS assessment completed prior to starting interventions - Complete reassessment of anxiety at each visit - Encourage parents to complete tools when possible
Incorporation of brief mindfulness interventions during adolescent primary care visits	Bluth et al. (2016) Crowley et al. (2018) Díaz-González et al. (2018) Marusak et al. (2018) Tan & Martin (2015)	- Provide initial educational visit regarding what mindfulness is and obtain consent - Provide brief mindfulness intervention education and gain feedback - Encourage MBI practice within home and school environments - Provide resources for take-home practice - Potential future development of group work if there are large group of adolescents in need
Involvement of parent or caretaker within adolescent mental health/mindfulness visits	Ali et al. (2017) Crowley et al. (2018) Tan & Martin (2015)	- Obtain consent from adolescent for parents to be included in visits (when appropriate) - Perform joint visits to promote supportive environment and receive information/feedback - Have parents complete anxiety scales when applicable and appropriate
PCPs undertake preparation to deliver MBIs to adolescents within their practice	Ali et al. (2017) Crowley et al. (2018) Tan & Martin (2015)	- Undertake online or in-person mindfulness training course - Practice mindfulness - Integration of current literature related to brief MBIs in primary care setting to adolescent clients - Review and seek out new and evolving research and literature related to brief MBIs in primary care

Although the findings of this integrative literature review supported the use of MBIs within primary care practice, certain limitations remain to be addressed. The following section aims to address these limitations and provides recommendations that PCPs can use to guide them when beginning to determine how to best implement MBIs within their adolescent populations.

Limitations Within the Research

When introducing new concepts within primary care practice, a review of the limitations provides a complete picture of the issues at hand while providing clarity on areas that must continue to be worked on. When PCPs are aware and address these limitations, next steps can be taken to begin incorporating MBIs to adolescents to ensure the best possible course of action is taken to manage anxiety within primary care practice.

A notable limitation seen within the literature was a lack of cultural diversity among adolescent participants receiving MBIs. Although attendance and engagement rates in many of the previously discussed studies were high, many of the studies were conducted with primarily Caucasian populations and do not consider potential racial and ethnic barriers related to mental health care delivery (Tickell et al., 2020). Within Canada, those who suffer from generalized anxiety disorder already face significant barriers related to stigma, discrimination and limited outpatient resources which could be detrimental for a racially or ethnically diverse individual (Watterson et al., 2017). Therefore, interpretation of the MBI results must be used cautiously and future research is needed to address potential barriers to care in other ethnically diverse population groups (Tickell et al., 2020). When addressing ethnically diverse populations, it is also important to measure safety related to new interventions introduced within practice, both culturally and physically.

An additional limitation found within the literature was a lack of large-scale studies (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018; Marusak et al., 2018). In discussing the findings in this literature review, the majority of MBI-related research in adolescents was conducted within pilot studies, clinical cohort studies or randomized controlled and showed small numbers within research groups (Ali et al., 2017; Bluth et al., 2016; Crowley et al., 2018; Díaz-González et al., 2018; Marusak et al., 2018). There can be many reasons hypothesized as to why research groups have remained small within these various settings. As adolescents typically cannot participate within research studies without parental permission, this can be perceived as a barrier – especially if parents are not understanding of what exactly mindfulness interventions are. In British Columbia, consent is based on the capacity of an adolescent fully understanding the necessity, risks and benefits of the health care services delivered – therefore, it is vital for PCPs to work alongside both adolescents and their parents or caregivers to establish what factors may help or hinder access (Infants Act, 1996; Reardon et al., 2017). Furthermore, many PCPs find that parental involvement in adolescent primary care is optimal for follow through with different treatment recommendations (Radovic et al., 2015).

As previously discussed within the findings, parental and/or caregiver involvement with MBIs provided these supportive individuals with the opportunity to ask questions, learn more about mindfulness and allowed them to provide valuable insights into the benefits or response of their children within the study (Ali et al., 2017; Crowley et al., 2018; Tan & Martin, 2015). Although these studies included parents/caregivers, PCPs are well-aware that this may not be acceptable for many families with strained relationships. Therefore, careful consideration must be taken when discussing family history and safety with adolescent patients in primary care.

Finally, the last limitation seen throughout the studies was a lack of mindfulness practice being implemented within primary care settings. As mindfulness is an emerging topic, there is limited data surrounding how these MBIs can be effectively integrated within primary care practice. Although search efforts were attempted to be made to seek out information related to mindfulness and primary care, there was a lack of available research. As many of the studies included within the literature review were conducted within school or outpatient clinical settings and taught from skilled mindfulness practitioners – it provides rationale for PCPs to begin thinking about how they can best integrate MBIs within their management plans for adolescent anxiety.

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Conclusion

The development of anxiety is one of the most fear and stress-provoking events an individual can experience. With the development of anxiety in adolescence, a lack of education and treatment can lead to a life-long struggle with adult anxiety and other comorbidities that can follow this diagnosis (PHEC, 2014). In this regard, PCPs have opportunity to offer MBIs that can improve negative symptoms that occur concurrently with a diagnosis of anxiety (Malla et al., 2018). Throughout this literature review, a thorough analysis of the benefits of mindfulness was demonstrated in both clinical and outpatient settings as a progressive and holistic approach in helping adolescents manage negative symptoms related to anxiety. Although there was limited research available regarding the implementation of mindfulness within primary care settings, the benefits of mindfulness in other settings showed great promise in allowing PCPs to begin incorporating brief interventions within their own respective practices until more research in this setting is available. With several recommendations provided to help assist in navigating the integration of mindfulness within primary care, benefits can not only be seen within the adolescent experiencing anxiety, but can benefit the support networks including parents and/or caregivers of the adolescent along with the practitioner delivering these interventions through proper assessment, education and brief implementation strategies that are timely and cost-effective (Beach et al., 2013; Fulweiler & John, 2018; Patton et al., 2016). It is with this hope that future changes can be made to adolescent-focused primary care practice to include self-efficacious interventions such as mindfulness so that adolescents can feel they have control over the negative effects experienced with anxiety.

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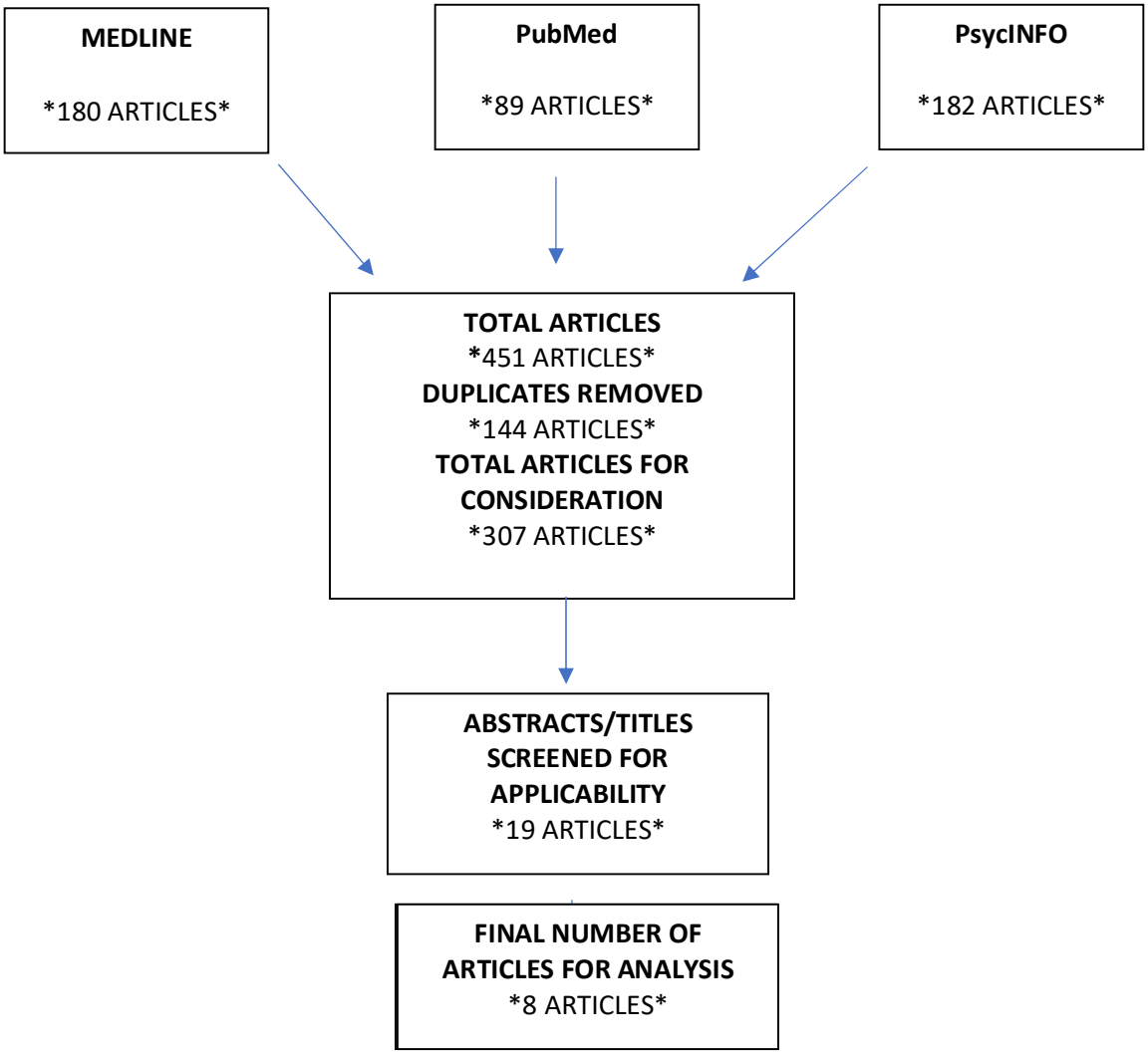
Appendix A

PRISMA Diagram of Literature Search



Appendix B

Literature Matrix of Reviewed Articles

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Ali, Weiss, Dutton, McKee, Jones, Kashikar-Zuck, Silverman, & Shapiro (2017) *Mindfulness-based stress reduction for adolescents with functional somatic syndromes: A pilot cohort study*	To assess the feasibility of a MBSR program in reducing the burden of somatic symptoms for adolescent patients who have chronic pain diagnoses.	Pilot cohort study Three cohorts were chosen after applying inclusion/exclusion factors listed below: 1) Patients were majority 12-18 years old (with 1 10 year old) and 2) had different physical diagnoses but were 3) excluded if they used narcotics, had autoimmune or inflammatory conditions or a serious illness within 90 days. Attended 1.5 hour group sessions for 8 weeks, 1 4-hour retreat and completed at-home assignments of 15-20 minute guided practices. Assessed at baseline, 8 weeks and 12 weeks. Completed both questionnaires and parents provided feedback.	15 subjects were studied in total. Scores improved in mindfulness, anxiety, stress level and quality of life in over half of the patients involved (60-80%). Parents saw improvements in their children's quality of life following the MBSR program. Amount of home practice for MBSR techniques correlated with greater improvements in wellbeing. Subjects indicated that group format was beneficial to bond with others and that MBSR techniques were easily incorporated into day Results for decreases in anxiety remained statistically significant after 12 weeks in both patient and parent evaluations	Patients had not only struggled with mental health concerns but also physical health concerns that can accurately depict situations for primary care providers in community. Parents were involved in providing feedback using measurement tools. Reminders were sent to the participants to complete their home practices to help maintain results. Used a mixed method approach of completing questionnaires in addition to qualitative responses. 83% of the participants completed the program.	Small sample size Lack of a comparison group, non-blinded or randomized study. Reliance on self-reporting questionnaires. Lack of diversity amongst participants (most were white, middle class). Large financial incentive ($200) – may be seen as bribery rather than incentive.

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Bluth, Gaylord, Campo, Mullarkey, & Hobbs (2016) *Making friends with yourself: A mixed methods pilot study of a mindful self-compassion program for adolescents*	To determine the acceptability and capability of starting a mindful self-compassion program named Making Friends with Yourself (MFY) and its effects on preliminary psychosocial outcomes. Hypothesized that adolescents would have lower symptoms of depression, anxiety, negative affect, perceived stress and high life satisfaction and emotional connections. Also predicted that mindfulness/self-compassion would independently predict changes in outcome measures.	Waitlist-controlled crossover study (embedding qualitative data into intervention design) Included in study if not endorsing suicidal ideation. Was then split up into 2 cohorts: treatment and waitlist control. MFY = 6 week course, meeting for 90 minutes/week. Lead by mindfulness practitioner. Introduced to both formal/informal practices in person and instructed to complete formal/informal practices at home through audio and video recordings. Audio was collected for qualitative data, questionnaires asked questions regarding: mindfulness, positive/negative affect, self-compassion, life satisfaction, perceived stress, anxiety, depression and social-connectedness. Considered completed after finishing 3 surveys and attending at least 4/6 classes.	34 students ages 14 to 17 completed the study. 74% of participants were female and primarily of white ethnicity. Participants engaged on average 2.01 days of home practice/week. Cohort 1 reported statistically significant improvements in life satisfaction ($\beta = 0.30$, $p = 0.04$), lower depression ($\beta = -0.27$, $p = 0.004$), lower trending anxiety ($\beta = -0.20$, $p = 0.098$) and improved social connectedness ($\beta = 0.21$, $p = 0.097$) compared to waitlist group. When conducting baseline values, increases of mindfulness predicted decreases in depression ($\beta = -0.49$, $p = 0.01$) and anxiety ($\beta = -0.59$, $p = 0.01$).	Found to be a feasible program, demonstrated good attendance (89% for cohort 1, 78% for cohort 2). Used both qualitative and quantitative information to relay efficacy of program. Program was developed by a mindfulness practitioner and teacher of 35 years. Designed appropriately to suit the attention span of adolescents, different modules such as education material in addition to performing physical acts of self-compassion such as placing hand over chest or holding one's hand. Asked for feedback from the participants regarding what they liked/didn't like in program to adjust for future interventions. Applied mindfulness strategies in addition to providing learning regarding emotions, self-awareness and the biology of the teenage brain.	Many adolescents did not appreciate the length of the guided meditation or forgot at home practices (was not adjusted for adolescents but taken from adult program, did not receive reminders). Small sample size, mostly female population, came from well-educated, middle class families. No post-intervention follow up. Received monetary gain for completing surveys/program. Trends seen towards improvement to negatively-described emotions -> potential bias from adolescents?

Author(s)/ Title/Date	**Purpose/Aim/ Hypothesis**	**Study Design/ Method/Sample**	**Results/Findings**	**Strengths**	**Limitations**
Borquist-Conlon, Maynard, Brendel, & Farina (2019) *Mindfulness-based interventions for youth with anxiety: A systematic review and meta-analysis*	To synthesize emerging evidence and studies that study the effects of mindfulness-based interventions (MBIs) for youth with anxiety disorders. Also wished to gain a better understanding towards immediate effects of MBI and long-term effects on anxiety.	Systematic review study Meta analysis for quantitative synthetization of information Studies were gathered between 1980 and 2015 and compiled information for participants ages 5-18. Studies must have included a between-group or quasi-experimental design with an MBI versus a comparison condition. Required measuring anxiety as an outcome. Information retrieved from 12 electronic databases, reference lists of included studies, and relevant websites. After review of titles and abstracts – 72 articles Full-text screening – 8 articles	Final sample for review – 5 articles (Two used randomized study design and three used quasi-experimental design). Total of 188 youth between ages 5 to 18 (mean age of 13.26). Majority of each patient group had diagnoses of post-traumatic stress disorder, generalized anxiety disorder, social anxiety or unspecified anxiety disorder. Present study found moderate and positive effects of MBIs. Grand mean *g* value of 0.62 in favour of treatment and 95% confidence interval found amongst the 5 studies included. Mean effect size was smaller when compared to similar meta-analyses of adults.	Studies analyzed came from various parts of the world (Canada, US, Kosovo, Australia and Sri Lanka) Studies chosen made adjustments to adult programming in order to make it more suitable for children Different programming along with psycho-educational components allowed for both practical and experiential learning Meta-analyses provide increased grounds to see trends within the research when pooled together that may go unnoticed otherwise.	One study was at risk for highly biased results. Small sample of youth (188). Various meanings of what MBIs constituted. Heterogenicity amongst studies (indicating that variation in effect sizes between studies was larger than expected due to sampling errors alone -> does not point to same underlying population effect. Did not acknowledge long term benefits of MBIs. Discussed how making adjustments to programs could affect efficacy.

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Crowley, Nicholls, McCarthy, Greatorex, Wu, & Mayes (2018) *Innovations in practice: group mindfulness for adolescent anxiety – results of an open trial*	To examine the feasibility, acceptability and effectiveness of a group mindfulness therapy (GMT) program delivered within school for adolescents with anxiety concerns. Hypothesized that GMT would provide reductions in anxiety, stress and attention problems.	Pilot cohort study Adolescents were chosen from a central Connecticut school and parents completed a questionnaire entitled SCARED (point cut off of >/30) then provided parental consent to be allowed within the study. Students served as their own controls. Pre-treatment data was gathered 10 days before and 3 days post-treatment. GMT was delivered over 10 weeks in weekly 60 minute sessions after school and delivered via an occupational therapist. Provided with guided practice and weekly home practice. Questionnaires were completed addressing anxiety, anxiety severity symptoms, global functioning and stress.	Final cohort sample: 11 adolescents aged 12-13 years (seven female, 4 male). 1 student dropped out 5 weeks in. Therefore 10 at final. Attendance rates were high (8.8 sessions on average). Improvements were seen on self-ratings of internalizing problems externalizing problems, improvement of parent-observed internalizing problems of youth, anxiety and self-reported stress. Also demonstrated improved concentration. Participants stated that they would recommend this program to their friends.	Parents were also included to measure outcomes for adolescents. Provided follow up data prior to initiating and 3 days following treatment to assess whether learning was sustained. Provided at a reasonable time after school with trained psychologist assisting with sessions. Intervention delivered via trained mindfulness practitioner. Various parameters measured (internal/external measures) Provided different approaches suitable for adolescent learning to learn present-moment focus.	Small sample population. No control group. Participants coming from 1 school (lack of diversity). Social desirability may have been a factor in results. Two of the authors were group facilitators (? Bias)

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Díaz-González, Dueñas, Sánchez-Raya, Elvira, & Vázquez (2018) *Mindfulness-based stress reduction in adolescents with mental disorders: A randomised clinical trial*	To evaluate the use of mindfulness-based interventions in adolescents with various psychological conditions. Hypothesized that mindfulness-based stress reduction (MBSR) along with treatment as usual (TAU) within mental health centers should show a decrease in psychological symptoms and stress and an increase in mindfulness and self-esteem compared to the group not receiving the mindfulness intervention.	Randomised clinical controlled trial Inclusion criteria: received mental health services within Cordoba, Spain and be between the ages of 13-16 in four waves between 2014-2016. Exclusion criteria: having neurologic/psychiatric condition that would interfere with participation or current drug/alcohol misuse or dependence. Participants were blinded and randomly assigned to MBSR+TAU or TAU groups. Questionnaires grading mindful attention, self-esteem, perceived stress, anxiety, and patterns of systems were provided at baseline and after 8 weeks of treatment. MBSR groups included eight 90-minute sessions (formal practice [meditation, body-scan, yoga/hatha exercises], discussions re: issues affecting adolescents) and encouragement of completing home practices.	Final number of participants = 80 (44 female, 36 males) with average age of 14.61 in MBSR+TAU group and 14.49 in TAU group. After completion, there was significant main effect for straight anxiety post treatment ($M = 53.87$; $SD = 33.36$) compared to TAU group ($M = 67.05$; $SD = 32.15$), $F(1, 77) = 2.79$, $MSE = 2049.06$, $p < .05$. Greater impact was seen in MBSR+TAU group for symptoms related to depression, anxiety, paranoia and perceived stress. Low frequency of practice at home was seen in the MBSR with none completing the 8 week at-home exercises. Changes in mindfulness were not statistically different in the 2 groups. Adolescents who score higher in anxiety need/benefit more from MBSR.	Study completed for patients with previously diagnosed mental health conditions within a mental health center. Similar number of male vs. female participants. Similar diagnostic profile amongst groups. Multiple questionnaires provided to assess efficacy on different areas. MBSR delivery was adapted to reflect attention span of adolescents. Varied randomized groups over 2 years with no financial incentive -> strictly voluntary. Trained practitioners provided intervention. Approximately 75% retention rate through the program.	No follow-up assessment following intervention. Difficulty ensuring patients maintained practice at home. Low statistical significance in other areas for mindfulness except for trait anxiety. Small sample size (80). Researchers were not blinded -> potential for bias?

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Dunning, Griffiths, Kuyken, Crane, Foulkes, Parker, & Dalgleish (2019) *Research review: The effects of mindfulness-based interventions on cognition and mental health in children and adolescents – a meta-analysis of randomized controlled trials*	To establish the efficacy of mindfulness-based interventions (MBI) for adolescents that have been studied within a randomized, controlled trial design. Stated hypotheses of all the randomized controlled trials (RCT) was that MBI would be superior than the active control arm for specified outcomes.	Systematic review study RCTs were chosen that had either passive comparison conditions OR comparison with a structured comparison with an alternative to MBIs were included. Inclusion criteria: -MBIs delivered face-to-face over a number of sessions - Provided by mindfulness practitioners - Participants aged 18 and younger. Measurements of mindfulness, cognition (executive functioning/attention), behaviour (social/negative), emotion (depression, stress/anxiety) outcomes Analyses included importance of study quality, duration of MBI training, age of participants Studies collected from electronic databases or reference lists of same. Analyses were conducted using the Comprehensive Meta-Analysis program with confidence intervals calculated for effect sizes.	Final number of studies after analysis: 33 Participants receiving an MBI improved significantly more than the control condition for the categories of mindfulness and executive functions. Categories of Depression and Anxiety/Stress showed significantly greater reductions after an MBI than control condition. For statistically significant results, effect sizes ranged from small (.19) to small to-moderate (.30). Sub-analysis for RCTs with control group showed those completing MBIs improved significantly and had reduction of problems in depression, anxiety and stress categories ranging from small (0.18) to small-to-moderate (0.42). Dose of MBI significantly moderated Negative Behaviour with more training associated with fewer negative behaviours	Large sample of studies chosen to assess. Included only randomized controlled studies for better quality analysis and prevents against test-retest effects. Studies taken from wide range of online journals. Number of hours practicing taken into account to monitor for efficacy/changes in results. Reinforces the promise of MBIs being a useful and feasible option for improving mental health for youth. Address the window of opportunity for the most beneficial results (14-18) Describe each method of MBI that was used for each study.	Almost all categories suffered from heterogeneity in the RCTs included (lack of similarity of methodology used). Evidence of publication bias for negative behaviour, anxiety/stress and mindfulness -> preferred publication of positive results. Some categories were only populated with only 5 studies -> makes it difficult to be confident re: robustness. Decided to run new MBI protocols rather than established protocols -> enhances likelihood of bias. 1/3 of studies lacked mindfulness as outcome.

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Marusak, Elrahal, Peters, Kundu, Lombardo, Calhoun, Goldberg, Cohen, Taub, & Rabinak. (2018) *Mindfulness and dynamic functional neural connectivity in children and adolescents*	To test for connections amongst mindfulness, neural connectivity and signs of psychological health (anxiety/depression) in the sample. To evaluate the amount of present-centered thoughts through MRI scans and measure convergence between state and trait measures	Clinical cohort study Report based on functional magnetic resonance imaging (fMRI) studies Participants completed self-reported measure of trait mindfulness, pubertal maturation, anxiety and depressive symptomology prior to scan. Completed questionnaire following scan asking about internal experiences during scan (ie. being focused or past/future oriented thoughts) Independent components analyses were conducted to identify 4 networks of interest: default mode network [DMN] (mind wandering), salience and emotion network [SEN] (attentional awareness of mind wandering), and central executive network [CEN] (present moment focus).	42 children and adolescents (23 female, 19 male with average age of 10.3) Higher mindfulness was associated with lower levels of anxiety. No effects of mindfulness, age or age x mindfulness interaction on static connectivity showed any significant findings. More mindful children spent less time in state 2 (mind wandering) and showed greater number of state transitions during the resting scan. More anxious children showed fewer strait transitions and longer dwell time in state 2 (mind wandering). More mindful participants showed reduced DMN-CEN connectivity which is similar to adults. Greater neural flexibility allows individuals to not get stuck in patterns of thinking -> hallmark of anxiety.	Sample of participants that was racially and economically diverse with various psychiatric backgrounds. Use of MRI imaging for solid, evidence-based neuronal mapping Pre and post-test questionnaires which patients were not informed of prior to study commencing Positive correlations between improved mindfulness leading to decreases of anxiety Pathophysiological information provided preliminarily regarding different areas of the brain and ability to shift the mind during stressful situations. Age controlled variance for findings within different age groups with $p < 0.05$.	Younger children participated within study -> may have influenced outcomes by not having awareness of mindfulness similar to adolescents A correlation-based approach -> may require prospective intervention to address causal link between mindfulness/neural connectivity Did not include other networks that may be relevant for mindfulness in children (based off adult findings) Relatively small sample size Not a randomized or blinded study

Author(s)/ Title/Date	Purpose/Aim/ Hypothesis	Study Design/ Method/Sample	Results/Findings	Strengths	Limitations
Tan & Martin. (2015) **3** *Taming the adolescent mind: A randomised controlled trial examining clinical efficacy of an adolescent mindfulness-based group programme*	Using the Taming the Adolescent Mind (TAM) mindfulness program to assess the impact on psychological symptoms in adolescents within community mental health clinics in comparison to a treatment-as-usual (TAU) group. Hypothesized that participants in the TAM group would show better improvements in mental health and functioning, an increase in self esteem and resiliency compared to the TAU group. .	Randomized controlled trial Participants recruited from 3 different community child/adolescent mental health clinics via posters Inclusion criteria: - Primary psychiatric diagnoses - No previous mindfulness training Exclusion criteria: - Intellectual impairment - Organic brain syndromes - Chronic substance abuse - Acute suicidality or psychosis Randomly allocated to two groups (TAU+Mindfulness and TAU) Participants and carers completed 3 questionnaires (pre (1), post-intervention (2) and 3-month follow up (3)). TAM intervention: 5-week programme performed via sensory exercises and directing attention. Provided 1 hr pre-course session to parents.	Total of 80 participants in the study (75% were female, age ranges of 13-18 years [median = 15.4]), 69% were not on medication. Mindfulness + TAU participants had lower depression, anxiety scores compared to TAU groups and showed similar findings in post test and 3 month follow-up. Self esteem improved significantly in treatment group compared to control group at time period 3. Parents in treatment group reported improvement in adolescents in treatment group at time 3 compared to control group parents. Mindfulness scores were significantly higher at all time variants in the treatment vs. control groups. Effects were shown that the mediator (mindfulness) would predict positive change on the dependent variable (mental health) when controlling for the independent variable (group).	Mindfulness intervention was adapted to better suit adolescent attention spans. Follow up questionnaires at three different time periods, specifically 3 months following. Inclusion of parent/carer reports. Multiple areas of emotional well-being were assessed. Fairly high retention rate throughout intervention Provided rationale for the potential benefits of future implementation of TAM for other mental health clinics Small group sizes for TAM Ability for patients to connect with one another	Relatively small sample size Reliance on self-report measures -> may lead to social desirability or bias Lack of data to examine a possible facilitator effect (ie. Enthusiastic TAM instructor vs. passive TAU instructor) Received financial compensation of $20, could be mistaken for bribery No ability for students to submit answers anonymously

Appendix C

Anxiety Assessment Tools

Figure A1: Screen for Child Anxiety Related Disorders (SCARED) Tool

Screen for Child Anxiety Related Disorders (SCARED)
CHILD Version—Page 1 of 2 (to be filled out by the CHILD)

Developed by Boris Birmaher, M.D., Suneeta Khetarpal, M.D., Marlane Cully, M.Ed., David Brent, M.D., and Sandra McKenzie, Ph.D., Western Psychiatric Institute and Clinic, University of Pittsburgh *(October, 1995). E-mail:* birmaherb@upmc.edu

See: Birmaher, B., Brent, D. A., Chiappetta, L., Bridge, J., Monga, S., & Baugher, M. (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): a replication study. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(10), 1230–6.

Name: _____ Date: _____

Directions:
Below is a list of sentences that describe how people feel. Read each phrase and decide if it is "Not True or Hardly Ever True" or "Somewhat True or Sometimes True" or "Very True or Often True" for you. Then, for each sentence, fill in one circle that corresponds to the response that seems to describe you *for the last 3 months*.

	0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True	
1. When I feel frightened, it is hard to breathe	O	O	O	PN
2. I get headaches when I am at school.	O	O	O	SH
3. I don't like to be with people I don't know well.	O	O	O	SC
4. I get scared if I sleep away from home.	O	O	O	SP
5. I worry about other people liking me.	O	O	O	GD
6. When I get frightened, I feel like passing out.	O	O	O	PN
7. I am nervous.	O	O	O	GD
8. I follow my mother or father wherever they go.	O	O	O	SP
9. People tell me that I look nervous.	O	O	O	PN
10. I feel nervous with people I don't know well.	O	O	O	SC
11. I get stomachaches at school.	O	O	O	SH
12. When I get frightened, I feel like I am going crazy.	O	O	O	PN
13. I worry about sleeping alone.	O	O	O	SP
14. I worry about being as good as other kids.	O	O	O	GD
15. When I get frightened, I feel like things are not real.	O	O	O	PN
16. I have nightmares about something bad happening to my parents.	O	O	O	SP
17. I worry about going to school.	O	O	O	SH
18. When I get frightened, my heart beats fast.	O	O	O	PN
19. I get shaky.	O	O	O	PN
20. I have nightmares about something bad happening to me.	O	O	O	SP

Screen for Child Anxiety Related Disorders (SCARED)
CHILD Version—Page 2 of 2 (to be filled out by the CHILD)

	0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True	
21. I worry about things working out for me.	O	O	O	GD
22. When I get frightened, I sweat a lot.	O	O	O	PN
23. I am a worrier.	O	O	O	GD
24. I get really frightened for no reason at all.	O	O	O	PN
25. I am afraid to be alone in the house.	O	O	O	SP
26. It is hard for me to talk with people I don't know well.	O	O	O	SC
27. When I get frightened, I feel like I am choking.	O	O	O	PN
28. People tell me that I worry too much.	O	O	O	GD
29. I don't like to be away from my family.	O	O	O	SP
30. I am afraid of having anxiety (or panic) attacks.	O	O	O	PN
31. I worry that something bad might happen to my parents.	O	O	O	SP
32. I feel shy with people I don't know well.	O	O	O	SC
33. I worry about what is going to happen in the future.	O	O	O	GD
34. When I get frightened, I feel like throwing up.	O	O	O	PN
35. I worry about how well I do things.	O	O	O	GD
36. I am scared to go to school.	O	O	O	SH
37. I worry about things that have already happened.	O	O	O	GD
38. When I get frightened, I feel dizzy.	O	O	O	PN
39. I feel nervous when I am with other children or adults and I have to do something while they watch me (for example: read aloud, speak, play a game, play a sport).	O	O	O	SC
40. I feel nervous when I am going to parties, dances, or any place where there will be people that I don't know well.	O	O	O	SC
41. I am shy.	O	O	O	SC

SCORING:

A total score of ≥ **25** may indicate the presence of an **Anxiety Disorder**. Scores higher than 30 are more specific. **TOTAL =**

A score of **7** for items 1, 6, 9, 12, 15, 18, 19, 22, 24, 27, 30, 34, 38 may indicate **Panic Disorder** or **Significant Somatic Symptoms**. **PN =**

A score of **9** for items 5, 7, 14, 21, 23, 28, 33, 35, 37 may indicate **Generalized Anxiety Disorder**. **GD =**

A score of **5** for items 4, 8, 13, 16, 20, 25, 29, 31 may indicate **Separation Anxiety SOC**. **SP =**

A score of **8** for items 3, 10, 26, 32, 39, 40, 41 may indicate **Social Anxiety Disorder**. **SC =**

A score of **3** for items 2, 11, 17, 36 may indicate **Significant School Avoidance**. **SH =**

For children ages 8 to 11, it is recommended that the clinician explain all questions, or have the child answer the questionnaire sitting with an adult in case they have any questions.

The SCARED is available at no cost at www.wpic.pitt.edu/research under tools and assessments, or at www.pediatric bipolar.pitt.edu under instruments.

March 27, 2012

Retrieved from https://www.midss.org/sites/default/files/scaredchild1.pdf

Figure A2: State-Trait Anxiety Inventory (STAI) tool

State Trait Anxiety Inventory

Read each statement and select the appropriate response to indicate how you feel right now, that is, at this very moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	1	2	3	4
	Not at all	**A little**	**Somewhat**	**Very Much So**
1.	I feel calm	1	2	3	4
2.	I feel secure	1	2	3	4
3.	I feel tense	1	2	3	4
4.	I feel strained	1	2	3	4
5.	I feel at ease	1	2	3	4
6.	I feel upset	1	2	3	4
7.	I am presently worrying over possible misfortunes	1	2	3	4
8.	I feel satisfied	1	2	3	4
9.	I feel frightened	1	2	3	4
10.	I feel uncomfortable	1	2	3	4
11.	I feel self confident	1	2	3	4
12.	I feel nervous	1	2	3	4
13.	I feel jittery	1	2	3	4
14.	I feel indecisive	1	2	3	4
15.	I am relaxed	1	2	3	4
16.	I feel content	1	2	3	4
17.	I am worried	1	2	3	4
18.	I feel confused	1	2	3	4
19.	I feel steady	1	2	3	4
20.	I feel pleasant	1	2	3	4

Retrieved from https://www.advancedassessments.co.uk/resources/Mental-Health-Test.pdf